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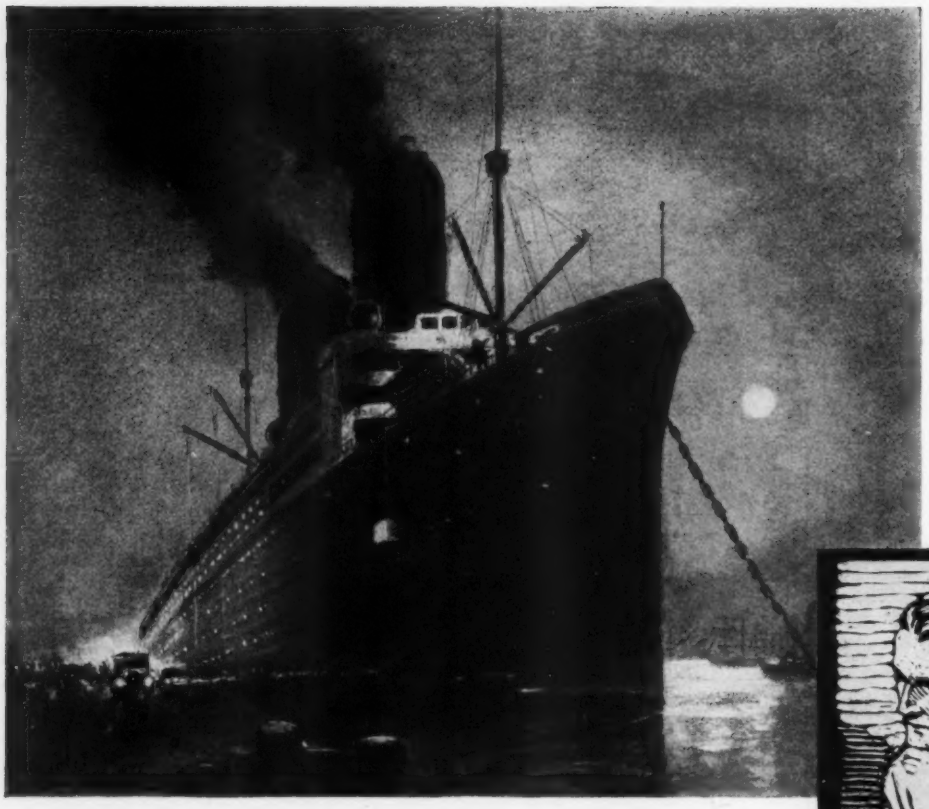

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Editorial

ROBERT RANDOLPH, Editor

Beautiful June—and West Baden

A PICTURE of the golf course, the swimming pool, the tennis courts, the beautiful drives stretching out lazily under the first warm rays of early June, may be soul-inspiring; it may be rest and recreation from the humdrum existence which is frequently the lot of candy men—but what the boss will want to know when you get back from the convention is not whom you met and how funny they looked, but what did you see that was new and what did you accomplish for the good of your company. Bosses are like that. He may enjoy your having a rest and vacation, but hardly on the company's expense account.

The fact of the matter is, there is much work to be done at West Baden. Never before has the industry been confronted with as great a crisis as now. Are you going to this great playground just to play, or because an atmosphere of rest and recreation is conducive to clear thinking and hard work? You remember, Nero fiddled while Rome burned.

A short time ago President Blunt mailed out to the trade a full page circular pointing out a number of reasons why we should all make it a point to be present at West Baden. Every argument he presented was sound—that it was a fine thing to get together once a year to meet old friends and make new ones—and possibly to conceal a secret suspicion that this excursion might not be an entirely profitable venture, he mentioned particularly that business success could not be entirely measured by dollars. A most excellent appeal to the pleasure-loving convention-goer and the professional greeter who sleep by day and toil over the cups by night—but is that the stuff conventions are made of?

One looked vainly for word or sign of encouragement to the exhibitors who are spending long weeks of effort preparing exhibits for the enlightenment and education of the industry. So far as the reader of Mr. Blunt's letter knew—there wasn't to be any exposition. Yet it is the exposition more than the convention proper that attracts the purchasing and production department heads who are responsible for keeping posted on developments in the confectionery supply field; these are the contacts on which the success of the exposition depends.

The man in Keokuk *must* go to the convention to see what's new in materials, machinery and equipment. Blueprints and circular letters will never tell him the story. He must see it in the flesh. With *him,* seeing is believing. The exhibits are for your education. And, too, the opportunity to meet the executives and technical experts of the supply manufacturers is not the least of the desirable features of the show.

Furthermore, the convention program of the N. C. A. this year promises to set a new pace from standpoint of interest and constructive value to the industry and to every individual in attendance. In advance of any official release of program plans we can assure our readers that there will be presented at West Baden this year some features that will give many a manufacturer in our industry a new conception of the value of conventions.

The keynote of our administration "The elimination of waste" is being applied to business organizations. The N. C. A. meeting at West Baden will be refreshing to those among us who can visualize nothing more than dry discussions on tariff schedules and cigarettes. The N. C. A. is getting its second wind and every manufacturer can well afford to make any reasonable sacrifice or adjustment to attend the convention this year—even to West Baden.

Candy—Food or Luxury

THERE are good foods which the whole human frame seems to enjoy. There are other equally nourishing foods which the average system revolts against. Is not the dietetic worth of the latter impaired by our natural aversion to them?

Science tells us that the foods which "make our mouths water" are more readily digested than flat, unsweetened and unseasoned foods, because they cause the salivary glands to pour forth their digestive fluids more abundantly.

The confectioner's job is to make good foods taste better, thus aiding their digestion. His to rob pale-faced ingredients of their consumer-resistance, making them palatable, appetizing and more digestible. His to add to the sheer joy of eating.

We could undoubtedly take our daily food supply in a series of compact, flavorless rations—or intravenously, if we would be further spared the trouble of eating. But would the doctors and dietitians subscribe to such methods? Hardly.

The old superstition that all those foods which we crave naturally and immensely enjoy, must perforce be bad for us is a relic of a barbarous age. We stand today on the threshold of a new era in scientific eating, wherein wholesome foods are recognized as being made even more wholesome by reason of the enjoyment which we take in them.

Announcing "The Packing Critic"

THE widespread interest shown by all branches of the industry in "The Candy Clinic" a department devoted to impartial practical analysis and constructive criticism of branded candies packed up at random in the retail market—has led to numerous inquiries as to the practicability of extending this service to include constructive criticism, by competent authorities, of the package itself apart from contents.

"The Packing Critic" is THE MANUFACTURING CONFECTIONER's response to these requests. We have been most fortunate in securing for this work the services of a candy packing material specialist who is himself a purchasing agent and therefore conversant with the limitations of package cost so often ignored by less practical critics.

Reports will be grouped according to classification of package contents and will be rendered in the same thorough and helpful manner as the candy criticisms in the M. C. Candy Clinic. The type of package to be covered each month will be announced during the month preceding so that manufacturers having new or novel designs or packing arrangements may submit them for impartial and constructive criticism in the proper package grouping.

This feature will be begun in an early issue.

M. C. Competitive Materials' Survey No. 3

Cocoa Butter

READERS who have followed and profited from the thorough analytical investigations of THE MANUFACTURING CONFECTIONER known as competitive materials' surveys Nos. 1 and 2 (No. 1—Corn Syrups; No. 2—Refined sugars), will be interested to know that Survey No. 3 is under way and will be ready for presentation early this fall. The subject—competitive cocoa butters—is one which intimately affects the business of every confectioner. Either he manufactures a surplus of cocoa butter over and above his own requirements—in which event he is interested in maintaining a merchantable standard of quality—or he is a buyer and user of this product which vitally affects the quality and "keep-a-bility" of his finished goods. Like its predecessors, the Cocoa Butter survey holds promise of bringing to light much that is of interest to manufacturers and consumers alike.

An Apology

In error, the March issue of THE MANUFACTURING CONFECTIONER carried a statement that Dr. Carey P. McCord, Director of The Industrial Health Conservancy Laboratories, had approved for scientific accuracy an article entitled "Candy and Girth Control," Part IV, The Role of Candy in Science and Health.

Dr. McCord wishes us to state that he has not given his official approval to this article nor any in this series.

It is true that Dr. McCord reviewed this article and failed to point out to us any scientific inaccuracies, however, he does not wish this to be construed as an official approval. His name, therefore, was associated with the article by mistake.

Dove-Tailing Costs Into the Books of the Confectionery Factory

By J. J. Berlinger, B. C. S.

(Senior Member, National Accounting Systems)

A COST accountant contracted with one of the world's largest candy manufacturers to (1) merge all cost records with the general books or accounts, (2) prove the cost accounts by incorporating in the monthly trial balance all elements of cost chargeable to the current month, and (3) distribute each expense, monthly, to maintenance and production.

The problem was a rather unique one on account of the size of the factory and the large output. The payroll force aggregates about thirteen thousand employes and the business was divided into one hundred and eighty-one departments in which practically everything used in their production was manufactured. Their catalogue lists fifteen hundred separate chocolate-covered assortments, of which many are carried in five different weights. Aside from the candy assortments, many brands of cocoa and cake or tablet chocolate are made and carried in stock.

To make it simpler to follow the cost methods, a few words concerning the character of the manufacturing processes may be of interest.

Before the beans go into the cocoa mill they are cleaned, roasted and cracked, or "kibbled." The kibbling process consists in breaking the roasted beans into the smaller pieces known as "nibs." These nibs are dumped into the mills, which grind them into a liquor.

Bucketfuls of this liquor are taken out of the tubs, dumped into canvas sacks and placed in a hydraulic press for separating out the cocoa butter.

After the butter has been pressed from the mass a dry cake remains. This press cake is subsequently broken down and ground into a powder, which is in turn sifted and packed into tins. This is the cocoa that we drink.

The chocolate is made in much the same way, except that the fat is not extracted. After proper mixing the liquor with sugar and flavoring materials the batch is placed in large pans or molds. After coming from the molds it is placed in the slab chocolate stockroom. The covering chocolate is trolleyed as needed to the dipping rooms, where the hand-dippers coat the centers of the candies.

Assortments for export are all tinfoil wrapped, and all export packages are wrapped and sealed in heavy sheets of tinfoil to insure the freshness of contents upon delivery.

Formerly this company's cost system was divided into two sections, one for maintenance jobs, and the other for cost of production.

The cost items of a maintenance job were entered on various store sheets, which were totaled at the end of each month, and the amounts transferred to a card summary. The cost of these jobs was not distributed as expense until the end of the year, at which time the cost was summarized and charged proportionately to the various departments.

The production costs were made up under two heads, the material costs being computed on one card, while the labor costs were tabulated on another. These two amounts were then combined and a percentage added for overhead expense.

And as usual under this system their greatest error had been to use a percentage for overhead based on the previous year's expenses.

Under the new cost arrangement it was proposed to have each set of cost records complete, that is, the clerks in charge of each section were to tabulate the cost of the completed job or article, making it unnecessary to combine different sets of costs.

A cost system is based on three fundamental elements; namely, Material, Labor, and Expense. Manufacturing cost for any given period comprises these three items which have gone toward production. Factory accounts have nothing to do with profit or selling expense.

Materials as they are purchased are charged to material account in the general ledger. In order to obtain a better analysis, this account is subdivided. Material represents a substantial portion of the working capital of this business, hence must be treated carefully. The total of all material used for the month becomes a credit to the material account in the general ledger, and the balance remaining to the debit of material is the value of the inventory at that period.

The material which has been drawn from stock and credited to the material account is charged to the manufacturing account and forms the first element of cost for that period.

Labor represents the entire pay-

roll, but it must be subdivided into direct and indirect labor to obtain proper results. Direct labor is the amount paid for productive labor and becomes a direct charge to the manufacturing account. Indirect labor is the amount paid for foremen, helpers, watchmen, and all other workers not engaged directly in the manufacture of the product. All of this, however, later enters into the general cost of manufacturing as part of the regular overhead expense or burden.

Each payroll is therefore charged to the labor account. Labor account is credited each month with the amount of direct labor payroll, which is charged to the manufacturing account, forming the second element of cost for that period. Labor account is also credited with the amount of indirect labor payroll, which is in turn charged to the burden account.

The burden account or overhead charge becomes debited with the various expense items, among which are, rent, insurance, taxes, depreciation, light, heat, power, superintendence, indirect labor, repairs, office expenses, and executive charges.

Items of fixed expense or annual charges are apportioned into twelve equal divisions and charged at the rate of one-twelfth per month to the burden account. This account forms the third element of the cost of production for the given period and is now charged in total to manufacturing.

Thus, the manufacturing account now comprises the total material, labor, and expense which have been used or incurred during the month in question. The next step is to determine what has been produced for this cost.

Had the factory been manufacturing large quantities of a single article and production cleaned up each month, the total manufacturing cost as determined above would simply be divided by the number of articles produced, and the result would be the cost of each unit.

Unfortunately, this ideal condition did not and rarely does exist. At the end of the month's production some work was still in process, and the number of units produced differed widely in cost of material and labor. To obtain individual costs of goods manufactured a unit for figuring costs had to be first determined.

Previously, stock had been manufactured and piled up without specific orders or any attempt at systematic planning.

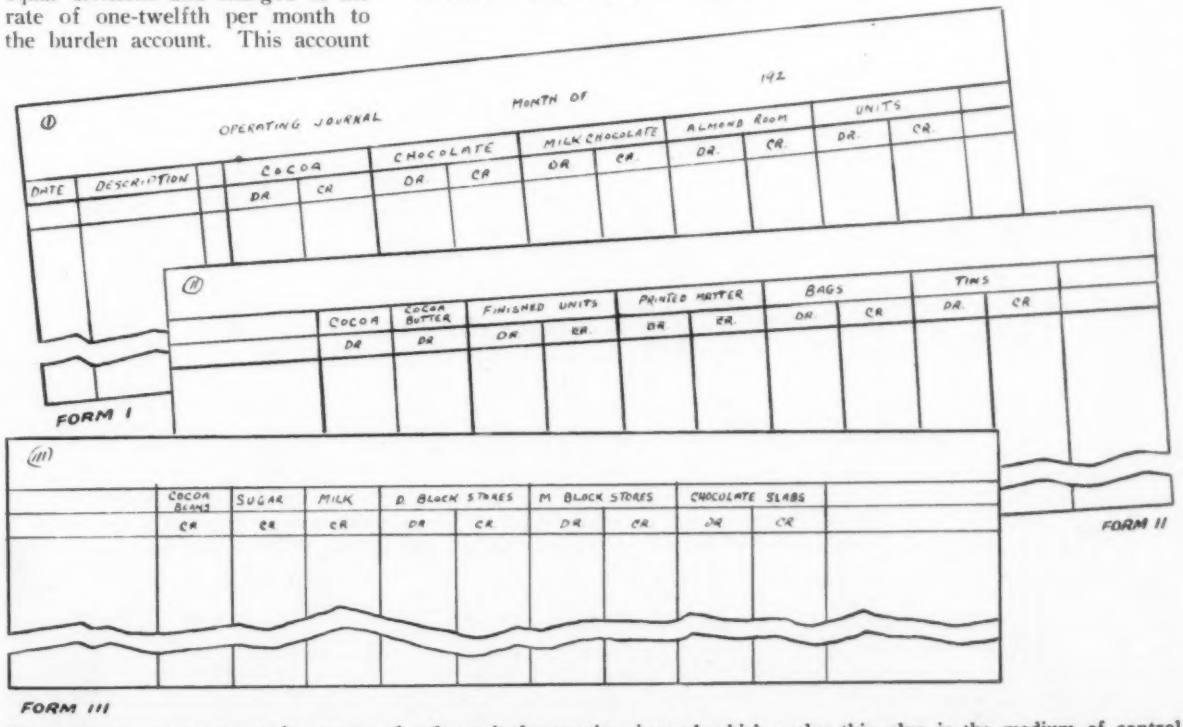
This practice naturally led to an overstock in some lines and an understock in others. When a planning department was finally organized, it not only eliminated a great deal of confusion and waste but actually created a saving of $46,800 in finished stock besides.

No work is now allowed to be begun in the factory without an official order from the planning department. A copy of this work order is retained in the office.

When the respective foremen receive these orders they proceed to translate them into requisitions for the materials needed to carry them out. Materials withdrawn from stock in this manner are charged to the specific orders on which they apply.

The details of the individual departmental records leading up to the cost summary are being purposely omitted from this discussion inasmuch as the object of the article is to explain how the costs are controlled.

In order to prevent formulas from becoming known to persons other than those authorized, great care must be observed in the handling of the material requisitions. Large sheets divided into sixteen perforated slips are furnished to the foremen who fill in only one slip



These sheets are representative pages of a loose leaf operating journal which under this plan is the medium of control over all cost summaries of work in progress

16					15					14					13					1
DATE	QUANTITY	ITEM	LOT	PRICE	DATE	QUANTITY	ITEM	LOT	PRICE	DATE	QUANTITY	ITEM	LOT	PRICE	DATE	QUANTITY	ITEM	LOT	PRICE	

FORM A

To prevent the proportions of the ingredients in a formula from becoming known, couponed material requisitions are filled in by the foreman, one slip at a time. After the quantities have been checked by the storekeeper, these slips go to the cost office

at a time. (See Form A.) After the quantities are checked by the storekeeper these slips are sent to the cost office.

Each slip is next entered on the proper cost summary. In order to reduce to a minimum the amount of clerical effort required to handle the completed summaries at the end of the month only one summary, per unit, per month, is opened.

Although "process costs" are determined, and the work executed under specific orders, the method employed is necessarily a combination of the "process-cost" method and the "production-order" method.

The time consumed by all employes in a department is entered on time cards, which show also the work or nature of the operations which are being performed. These cards necessarily account for all labor as the payroll is made up from them. Daily time cards could not have been used here, as the wage system was distinctly individual. This system was based on half day rate and half piece rate. Although the advantages of a straight piece rate method were evident, other considerations made it advisable not to adopt it.

After the wages office has finished with the time cards, they are forwarded to the cost office for entry on the cost summaries. Carrying out this procedure for the month, there is gradually being accumulated in the office the actual cost of materials and labor applicable to each order or class of orders. As an order is completed, the factory copy showing the number of completed units is passed along to the storekeeper who in turn sends the order to the office as his receipt for the finished goods.

Next, the cost clerks total the cost of material and labor which they have accumulated on their cost summaries and obtain the flat cost of manufacturing given orders.

The most perplexing problem comes in determining the propor-

(I)

	BOXING		PRINTING SHOP		BAGS		TINS		CARD BOXES		WOOD BOXES	
	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.

(IA)

	CARD BOXES		WOOD BOXES		COMPLETED ASSORTMENTS		MILK CHOCOLATE	COCOA	LABOR	BURDEN	
	DR	CR	DR	CR	DR	CR	DR.	DR	CR	CR.	

FORM IA

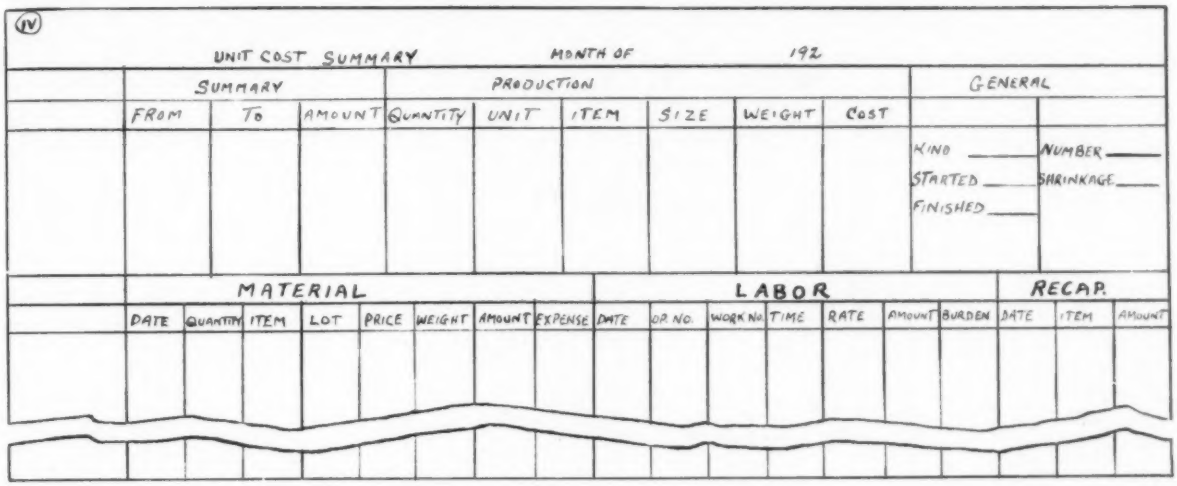
(III A)

	MILK CRUMB		COVERING CHOCOLATE		CARD STOCK	TIN	SOLDER	PAPER	TIMBER	RIBBON	
	DR	CR	DR	CR.	CR.	CR.	CR.	CR.	CR.	CR	

FORM IIA

FORM IIIA

Printed on the reverse sides of Forms I, II and III, these sheets comprise the right-hand pages in the operating journal and show the subdivision of the manufacturing account


(IV)

UNIT COST SUMMARY MONTH OF 192

SUMMARY			PRODUCTION						GENERAL	
FROM	TO	AMOUNT	QUANTITY	UNIT	ITEM	SIZE	WEIGHT	COST		
									KIND ____ STARTED ____ FINISHED ____	NUMBER ____ SHRINKAGE ____

MATERIAL								LABOR							RECAP.		
DATE	QUANTITY	ITEM	LOT	PRICE	WEIGHT	AMOUNT	EXPENSE	DATE	OP. NO.	WORK NO.	TIME	RATE	AMOUNT	BURDEN	DATE	ITEM	AMOUNT

FORM IV

Individual unit cost summaries are kept on sheets ruled up like this. Control over these is by the operating journal shown in the three (Nos. I, II and III), two pages preceding

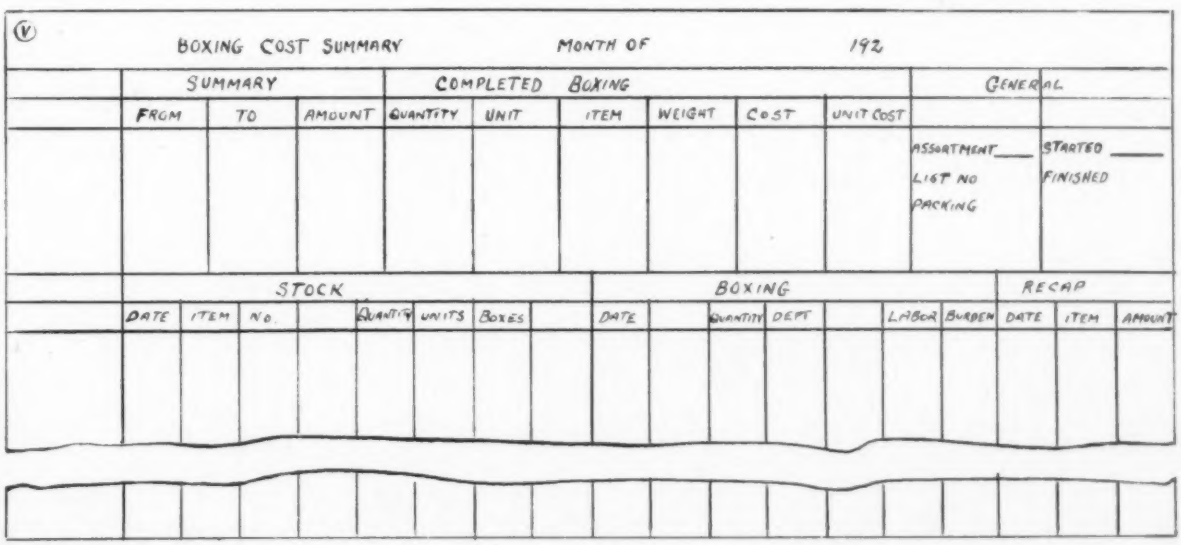
tion of overhead expense properly chargeable to the individual order. Let us go back for a moment to the burden account. It has been pointed out that this account gradually accumulates the entire expense charges for the month. Now a "constant," or percentage, must be determined, which when applied to the production for the month, will "clear" the burden. In this case at hand the most equitable manner in which to distribute this overhead is by a straight percentage basis, which is to say, the ratio of the total burden of a department to the total labor worked.

In this way a charge is determined which the cost clerks add to the individual orders in proportion to the amount of productive labor required to produce them.

A distinct advantage of this method of cost finding is that the total cost of any order or orders at any stage in the process of manufacturing may be determined instantly. In the factory accounts the manufacturing account has been charged with the cost of material drawn from stock, the direct labor from the payroll, and the total overhead charge for the month. The cost of the completed orders for the months are totaled and credited to manufacturing account and charged to finished stock or production. The balance which remains to the debit of manufacturing account is the actual value of work in process and can be proved against the costs of uncompleted orders.

Cost of unit and cost of boxed assortment (Forms IV and V) are

(*Continued on page* 52)


(V)

BOXING COST SUMMARY MONTH OF 192

SUMMARY			COMPLETED BOXING						GENERAL	
FROM	TO	AMOUNT	QUANTITY	UNIT	ITEM	WEIGHT	COST	UNIT COST		
									ASSORTMENT ____ LIST NO PACKING	STARTED ____ FINISHED

STOCK							BOXING							RECAP		
DATE	ITEM	NO.		QUANTITY	UNITS	BOXES	DATE		QUANTITY	DEPT		LABOR	BURDEN	DATE	ITEM	AMOUNT

FORM V

Form V, like form IV, is one of the individual cost summaries. It covers boxing and appears again in the operating journal at the left of the upper form

Usually, at the first sign of a favoring wind, Quality goes overboard.

CHOCOLATE— —Aroma Elusive!

By Robert Whymper

(Author of "Cocoa and Chocolate" and International Chocolate Authority; writing exclusively in The Manufacturing Confectioner)

IT has been indicated that the final color of cacao is largely a matter of oxidation acting for a sufficient time in a medium of correct acidity surrounding the red coloring matter of the kernels. This oxidation in practice takes place through the agency of enzymes and atmospheric oxygen. The lighter brown coloration of Criollo cacao arises from a colorless mother-substance also by oxidation. If the time and place allow, we shall return later to consider what is at present known about the chemical composition of these colors, but sufficient has already been written to show that the processing of cacao is not the simple matter usually believed by the manufacturer of cocoa and chocolate. The man in charge of fermenting and drying can make or mar any type of cacao according to the care he gives, whilst the man deciding which type of cacao shall be grown decides also the class into which the processed cacao should fall.

The fact that there is usually so little margin of profit to the grower of cacao has turned his attention quite naturally to increasing yield rather than improving quality, or, in other words, to agricultural rather than to technical considerations. Research work is costly and arduous: it cannot be rushed, nor can results be guaranteed in a given time. The selection of seed of such varied hybrids as are found among the commercial types of cacao grown, for example, requires at least four generations of successive offspring, or, say, 24 years, before the seed carrying the qualities desired by selection can be partially guaranteed. Many more years are necessary before those qualities can be fixed. Such research has been going on in Trinidad for a long time, and big-yielding cacao can now largely be guaranteed from the selected seed, provided, of course, the conditions for its growth are entirely suitable when transplanted.

Heredity vs. Trial and Error

Very little is yet known, however, about the transmission of offspring of parental qualities of cacao other than yield. The Mendelian laws of heredity are extremely involved when applied to hybrids and to complex and fortuitous crosses, and it can only be by endless trial and experiment, spread over many years, that eventually we shall be able to say that this or that color or flavor characteristic of the parent will be perpetuated in the cacao obtained from trees grown from the parent seed. Moreover, we have yet to learn much about the influence of climate and soil upon such qualities as color and flavor of cacao, though we already know their influence to be very great.

It can, then, be readily understood why co-operation between grower and manufacturer is so greatly needed. The grower cannot usually afford technical research for improving his product, nor does he see any good reason why he should go to any expense for the manufacturer who appears apathetic to all cacao matters except price. The result is the increasing preponderance on the market of cheap cacaos from heavy-yielding trees selected for their yield alone, processed as speedily and economically as possible. Quality is allowed to go by the board.

A brief consideration of the aroma and flavor of cacao at this point will be helpful in showing how much danger there is in careless processing and how much has yet to be done to improve even the poor quality of cacaos mostly grown at present.

When the beans are fresh in the pod, there is no aroma or flavor remotely resembling cocoa or chocolate. The beans have a pleasant melon-like odor, and the kernels are intensely bitter and astringent, the Calabacillo cacao being, of course, far more bitter and astringent than the Criollo or Forastero strains. The white slimey pulp surrounding the beans is both sweet and acid, a very pleasant and refreshing effect being obtained when the beans are sucked in the mouth.

Treatment Develops Latent Aroma

It is only 24 hours after removal from the pod that the first faint

aroma of cocoa or chocolate can be traced, and this can only be secured by boiling the kernels in water. Under proper conditions of treatment, the aroma increases steadily up to 6 days, and the final process of drying seems to increase that aroma out of all proportion to the mere loss of water suffered in the process. Moreover, we have found that the higher the temperature of drying the stronger is the aroma developed in the finished bean, a subject to which we hope to return later. In the meantime it can be said that this fact has led us to separate, at any rate in our mind, the characteristic cacao flavor into two parts (1) that developed during fermentation (2) that developed by high-drying or by roasting. In other words, if the second flavor is developed by too high drying, some may be lost or suffer before it reaches the manufacturer, and, in any case, cannot be regained by the roasting adopted in the factory. There is a further disadvantage in high-temperature drying, namely, that the shells are rendered brittle, and the beans break into small pieces during transport. Generally speaking, low-temperature drying within certain limits has been found to give the most satisfactory results and to have the most beneficial effect on the first flavor of cacao which subsequently, when the beans are roasted by the manufacturers, is complemented to the fullest extent by the second flavor.

Perils of Bruising

It will be observed that the true cacao aroma is developed *inside* the bean during the fermentation, whilst, on the outside, the pulp goes through alcoholic and acetic acid fermentations and finally develops some unpleasantly smelling bodies arising largely from decomposition of proteid matters. Under no circumstances must these unpleasant bodies be allowed to reach the kernels if good aroma is finally to result: hence there comes in one important point for consideration during the processing of cacao—the beans must not be broken, punctured, crushed, or rendered mechanically imperfect in any way, throughout all the handling to which they are subjected. It does not require a great imagination to appreciate how much care has to be exercised to prevent so easy a thing from occurring when tons of wet, slimey beans in all stages of fermentation have to be handled daily. Careless depodding, too large a mass of wet beans in transport, too large a mass of wet beans in the fermenting bins, crushing with the feet and cutting with shovels during turning when the skins of the beans are very tender and the beans themselves turgid, careless conveying to, and loading of, the dryers, and, indeed, even improper rates of fermentation—all these must be avoided to prevent this one danger alone, lest the kernels become contaminated.

(To be continued)

The most comprehensive and authoritative series on Cocoa and Chocolate which has been written in recent years.

Have you a complete file of these enlightening contributions to our chocolate literature? A limited number of back copies are available on request.

Mr. Whymper's series to date:

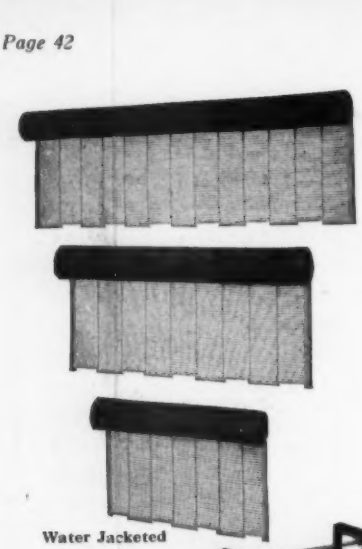
Use Less Accra.....Nov., 1928
Chocolate "Au Naturel".....Dec., 1928
Buy Cacaos by Brand.....Jan., 1929
Origin and Identification of Off-Flavors in Cacao..Feb., 1929
The Chemistry of Cacao Color.....Mar., 1929
Chocolate—Aroma elusive.....(current issue)

and

In the May Issue

Meet Mr. Cocoa-Grower—don't miss it!

Circles showing beans whose flavor and aroma are apt to have been impaired by bruising.



GREER Wire Belt

Greer Wire Belt is made in our own plant out of the very best wire. Standard belts in 16-in., 24-in., and 32-in. widths, fit any Coater or Enrober.

Any length of belt furnished as requested.

Wire belts are expensive. Why not buy the best?

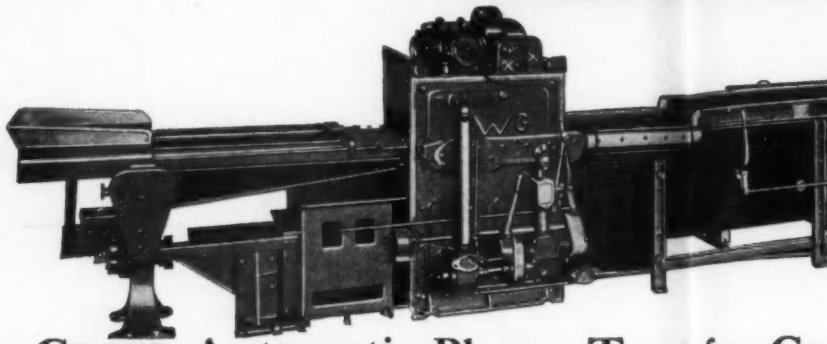
PATENTED

HENDERSON Crystal Rack

The Henderson Crystal Rack is the solution to the Crystallizing problem.

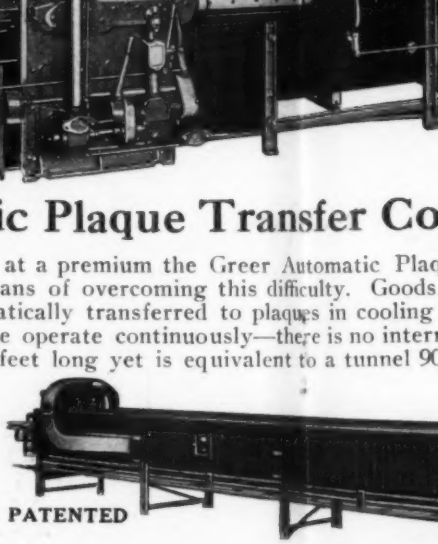
Produces 600 pounds of high grade goods per batch. Two batches per day.

Most compact, sanitary, economical, and labor saving method of making crystallized work.



GREER Automatic Plaque Transfer Co

Where floor space is at a premium the Greer Automatic Plaq machine is the ideal means of overcoming this difficulty. Goods machine and are automatically transferred to plaques in cooling ing and Cooling machine operate continuously—there is no interr ing machine is only 24 feet long yet is equivalent to a tunnel 90



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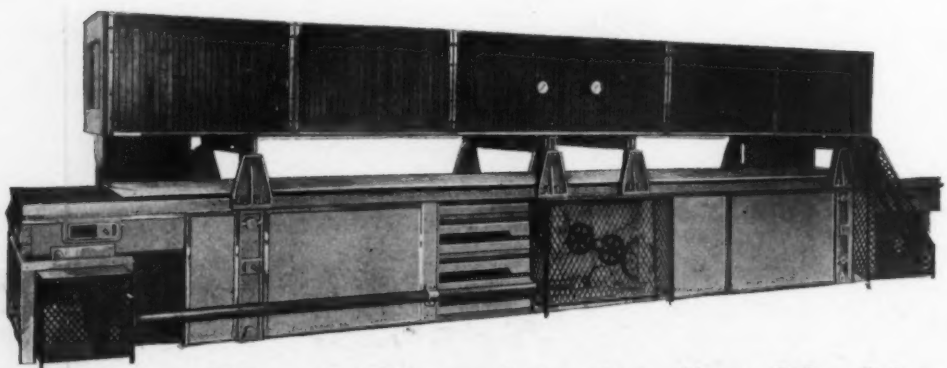


PATENTED

GREER Chocolate Cooling Machine

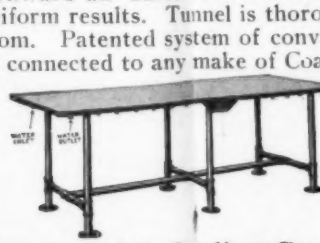
For Bars and Ten Pound Cakes

The Greer Chocolate Cooling Machine is recognized as the best and most modern means of cooling any solid moulded chocolate. The standard machine has a capacity of 2500 pounds per hour and yet occupies a space only 5½ feet x 28 feet.

Moulds of any size can be used in this machine. Warming tunnels are supplied to warm and return empty moulds to moulding room.

The GREER Cooli

The Greer Cooling Tunnel is awkward air ducts to be install uniform results. Tunnel is thoro room. Patented system of conv be connected to any make of Coa



GREER Quick Cooling Car

The surprising feature of this Candy is its cooling capacity. This is due to efficient method of injecting, circulating the water. It uses very little water. are obtainable only on a Greer Slab.

J. W. GREER C

Manufacturers of Confectioners' Machi

119-137 Windsor St. CA

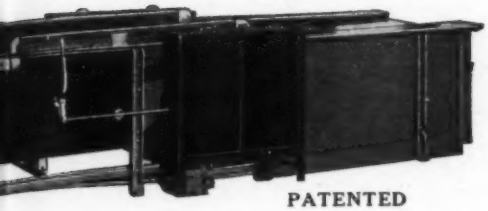
ER
rs Machinery
Dividends

GREER Perfected Chocolate Melting Kettle

The Greer Perfected Melting Kettles are the latest, most sanitary and efficient type of Melter. The use of Greer Kettles insures a uniform coating.

Outside surface is polished. No paint to crack off. Removable bearings throughout.

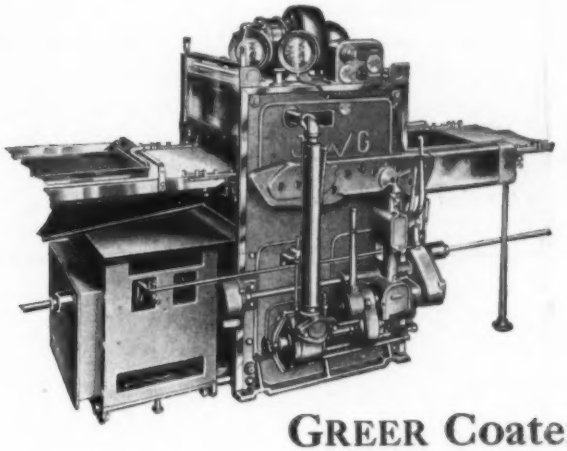
Made in 150, 300, 500, 1000 and 2000 pound sizes.



PATENTED

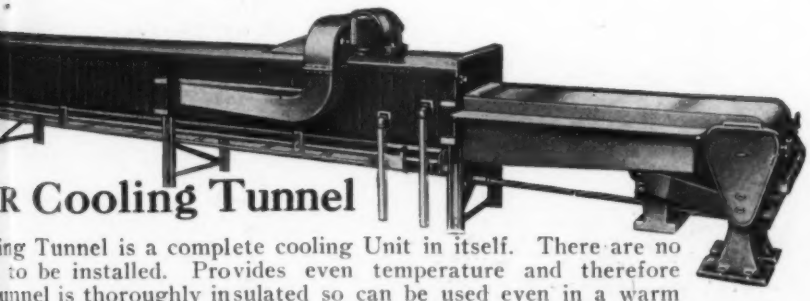
nsfer Cooling Machine

utomatic Plaque Transfer Cooling iculty. Goods are fed thru Coating ps in cooling machine. The Coat- ere is no intermittent motion. Cool- to a tunnel 90 ft. long.



GREER Coater

The Greer Coater produces a remarkable amount of coated goods, and yet maintains the highest of quality. Simplicity has been achieved at last in a coating machine. In operation it is practically noiseless—a noiseless type of blower and drive being used. Variable Speed Transmission—NOT STEP GEARS—provides any desired speed.



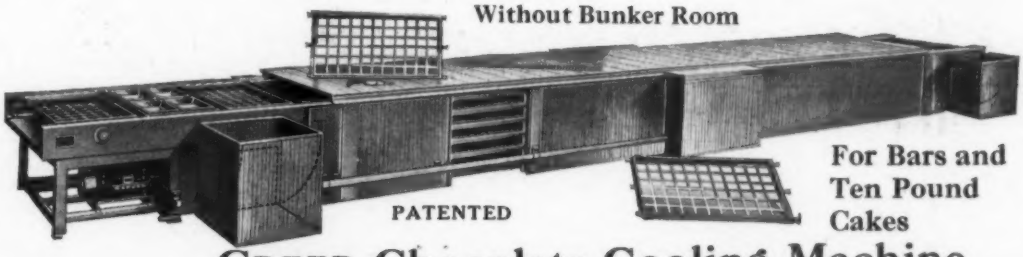
R Cooling Tunnel

ing Tunnel is a complete cooling Unit in itself. There are no to be installed. Provides even temperature and therefore unnel is thoroughly insulated so can be used even in a warm stem of conveying belt insures much longer life for belts. Can make of Coater or Enrober.

ooling Candy Slab

of this Candy Cooling Slab This is due to the unusually ting, circulating and draining little water. These features Greer Slab.

Without Bunker Room



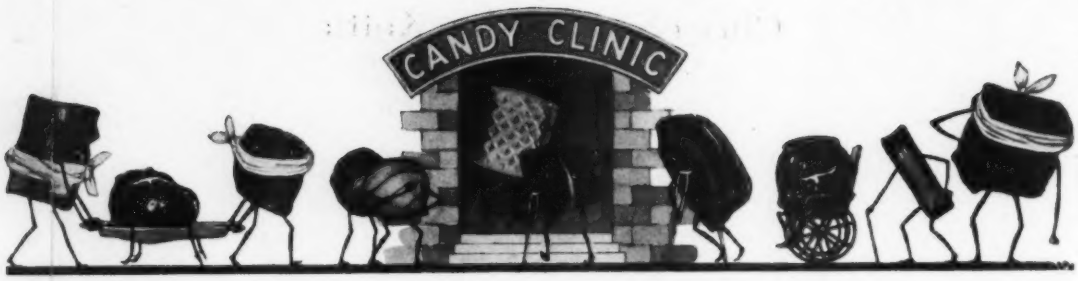
PATENTED

For Bars and Ten Pound Cakes

GREER Chocolate Cooling Machine

This machine is the same as that illustrated on opposite page except for Bunker Room. With this type cold air is supplied from coils located in some other part of the plant.

EER COMPANY
tioners' Machinery That Pays Dividends
t. CAMBRIDGE, MASS.



The candy Clinic is conducted by one of the most experienced superintendents in the candy industry. Each month he picks up at random a number of samples of representative candies. This month it is Home-made assorted chocolates; next month it will be assorted Home-made (uncoated varieties). Each sample represents a bona-fide purchase in the retail market, so that any one of these samples may be yours.

This series of frank criticisms on well-known, branded candies, together with the practical "prescriptions" of our clinical expert, are exclusive features of the M. C.

"HOME-MADE" Assorted Chocolates

(*Believe it or not—*)

Code 4A 29

Home Made Chocolates, $1.25 lb.

(M'f'd in Stoughton, Mass.)

Appearance of package: Fair. A Cellophane wrapper is needed on this package as it was finger marked and had dust spots on it. Suggest that a good ribbon be used instead of ribbonzene.

Box: Cream colored box, printing in brown. Had a white bond paper extra wrapper, name and trademark printed in red.

Appearance of goods on opening: Poor. The box had a center piece—a foil cup with chopped pistachio nuts on top and these nuts were all over the box and on the other pieces. Suggest that this piece be either wrapped in Cellophane, or that a different topping be used.

Chocolate coating: Sweet.

Color: Good.

Gloss: Partly gone.

Strokes: Very good.

Taste: Very good.

Centers: Maple Cream Pecan Top: Good.
Almonds: Good.
Cordial Strawberry: Very good.
Red foiled Maple Cream: Good. (See remarks.)
Vanilla Cream: Fondant good. Very faint flavor.
Belmont Cream: No flavor discernible.
Crystallized Jelly: Good. (See remarks.)
Opera Cream: Good.
Foil Cup: Solid Chocolate with a little Raspberry Jelly in center: Good.
Almond flavored Cream: Fair.
Pistachio Nut Top Cream: Flavorless.
Chocolate Garach: Good.
Orange Peel: Good.
Red foiled Maple Cream: Fondant good. Flavor very faint.
Raspberry Cream: Good.
Butter Taffy: Had a burnt taste.
Buttercream: Dry, hard and of poor flavor.
Pecan: Good.
Small round Cream: Flavorless.
Butterscotch: Flavor good, but too hard to make good eating.
Molasses Plantation: Hardly any flavor and too hard to chew.
Peanut Cluster: Good. (See remarks.)
Caramel and Opera Cream: Caramel grained. Opera Cream hard and dry.
Pignolia Cluster: Good.
Filbert: Good.
Sprinkle Buttercream: Rancid taste.
Caramel: Entirely grained.
Cocoanut Paste: Good.
Brazil: Good.
Nougat: Good.
Marshmallow: Good.
Peppermint Cream: Good.
Nougat and Caramel: Nougat good. Caramel too hard.
Wintergreen Cream: Good.
Vanilla wrapped Caramel: Had a good taste but was partly grained.
Chocolate M. M. wrapped Caramel: Had a good taste but caramel was grained.
Plain Chocolate Caramel wrapped: Good.

Assortment: Unusually large variety and had the candy been made properly, this would have made a first-class assortment.

Remarks: Your package needs close watching. New formulas are needed in some instances, as the present formulas do not hold up. The Buttercreams in particular, were very poor, having developed a rancid taste and become hard. The same might be said of the Opera Creams and Caramels. The Caramels were also badly grained, a condition for which there is not much excuse when product is to bring $1.25 lb. Also, Peanut Clusters have no place in a $1.25 box. A large number of pieces lacked flavor. The finest flavors that can be purchased should be used in candies in this price class. Underflavoring is a very serious defect in high grade goods. In fact, candy at any price, lacking in flavor, does not make particularly good eating. We suggest that the foil and jelly pieces be omitted, as they do not help the appearance of the top layer. Candy at $1.25 a pound is generally considered high-priced, consequently no foiled or jelly goods should be used.

Code 4B 29

Home Made Chocolates $1.00 lb.

(M'f'd at Beach Bluff, Mass.)

Appearance of package: Plain white bond paper. Suggest that a Cellophane or glassine wrap be used.

Box: Orchild-colored box.. Printing in deep orchid. Neat and attractive. Ribbonzene used, small bow.

Appearance of goods on opening: Fair, but pieces scratched and out of place.

Chocolate Coating: Sweet.
Color: Good.
Gloss: Partly gone.
Strokes: Good.
Taste: Good.
Centers: Vanilla Cream. Good.
Chocolate Caramel: Good.
Molasses Chip: Good
Chocolate Ganach Rolled in Cocoanut: Good.
White Cream: Hard, flavorless.
Maple Pecan Cream: Fondant hard, flavor faint.
Vanilla Caramel: Good.
Almond: Good.
Chocolate & Vanilla Cream: Chocolate good. Vanilla Cream hard.
Sprinkle Cream: Flavorless.
Nut Taffy Square: Entirely too hard, consequently, not a good eating piece.
Maple Cream, Pecan top: Good.
Chocolate Cream: Good.
Cocoanut Cream: Good.
Peppermint Jelly and Marshmallow: Jelly texture very poor. Marshmallow too tough, although flavor good.
White Cream rolled in sugar: Fondant good, flavor apparently absent.
Jelly Gum Drop: Good.
Pecan: Good.
Ting Ling: Good.
Peppermint Cream: Good.
Wintergreen Cream: Good.
Raspberry Cream: Good.
Vanilla Cream: Fondant hard, flavorless.
Maple Nut Cream: Fair although slightly dry.
Vanilla Nut Cream: Good.
Cocoanut Cream: Good.
Nougat: Good.
Butterscotch Cream: Butterscotch grained; cream dry and hard.
Vanilla Caramel: Good.
Vanilla Nut Caramel: Good.
Brazil: Good.
Chocolate, Caramel and Vanilla Cream: Cream grained; caramel good.
White Jap Jelly: Very poor piece of candy. Flavorless and very tough.
Assortment: Good.
Remarks: Again the chief criticism is in the lack of sufficient flavor. Flavors are cheap compared with other raw materials, such as nuts, cream, butter, etc. Better check up your manufacturing staff and find out if they are using the proper flavors, as well as the amounts which the formulas call for.

Jap jellies, tough marshmallow, grained caramels and pieces without sufficient flavor, do not belong in a box of candy which sells for $1.00 a pound.

Code 4C 29

Home Made Candies, $1.00 per lb.

(M'f'd in Brookline, Mass.)

(Purchased in Boston, Mass.)

Appearance of package: Fair. Lavender and green ribbonzene used. No outer wrap.
Box: Light blue-buff paper. Name and address printed in deep blue.
Appearance of box on opening: Poor. Very loose packing; pieces scratched. Chocolate sprinkles came off one piece and were all over the box.
Chocolate Coating: Sweet.
Color: Fair.
Gloss: Hardly any.
Strokes: Carelessly done.
Taste: Fair.
Centers: Cordial Pineapple: Good.
Butterscotch Cream: Fondant very hard. Butterscotch was in liquid condition and not good eating.
Ginger: Good.
Belmont Spiced Fudge: Fair.
Nut Nougat: Fair.
Cordial: Very good.
Peppermint Cream Walnut Top: Fondant good, flavor faint.
Brazil: Good.
Chocolate Nut Caramel: Good.
Plain Vanilla Caramel: Good.
Peanut Butterscotch: Good.
Cordial Cherry: Cordial good. No flavor.
Marshmallow: Very good.
Vanilla Chewy taffy: Fair.
Plain Butterscotch: Good.
Almonds: Good.
Filbert: Good.
Molasses Sponge Chip: Good.
Caramellow: Good.
Maple Cream: Good.
Orange Turkish Paste: Paste good, flavor could barely be distinguished.
Orange Cream: Good.
Raspberry Cream: Good.
Vanilla Cream: Good.
Molasses Cocoanut: Good.
Spiced String: A poor piece of candy for a chocolate center.
Lunch Cracker: Not a center for $1.00 chocolates.
Assortment: Good.
Remarks: This box is not up to standard. At $1.00 per pound an excellent package of candy may be had at almost any good store. Especially where batches are made by hand or in small units, very good candy can be made, but this does

Among those present - - - - - - - - - - - - Is Yours?

Representative of the wide collection of retail 'home-made" packages which were packed up and analyzed by our Superintendent for this month's Candy Clinic.

The CANDY CLINIC

You can pick up ideas from these reports for your own assortments. Alertness is the price of progress!

not seem to be the rule in the so-called Home Made chocolates or candies. The box, packing materials and finished appearance of packages do not seem to come in for sufficient attention. If the finished package has no sales appeal it will not sell.

Code 4D 29

Home Made Chocolates, $1.00 lb.

(M'f'd in Haverhill, Mass.)
(Purchased in Boston, Mass.)

Appearance of package: Good. Cellophane wrapper, seals on ends.
Box: Light buff colored, printing in brown. Very attractive looking.
Appearance of box on opening: Good. (See remarks.)
Chocolate Coating: Sweet.
Color: Good.
Gloss: Very good.
Strokes: Plain, carelessly done.
Taste: Fair; too sweet and not finished or "conched" sufficiently.
Centers: Cherry Cream: Fondant good, no flavor detectable.
Pistachio Nut Cream: Good.
Chocolate Fudge: Good.
Nut Nougat: Texture good; flavorless.
Maple Cream: Fondant hard, flavor good.
Almonds: Good.
Peanut Clusters: Good. (See remarks.)
Molasses Sponge: Very good.
Peppermint Cream: Fondant too hard. Flavor good.
Cocoanut Paste: Dry and hard. (See remarks.)
Chocolate Nut Caramels: Good.
Vanilla Caramels: Good.
Peanut Butter Blossom: Fair. Jacket too thick and too hard.
Raisin Clusters: Good.
Vanilla Cream: Fondant good, flavor faint.
Wintergreen Cream: Fondant very hard and dry. Flavor good.
Assortment: Fair.
Remarks: This box could stand a few centers such as marshmallow, jelly and assorted nuts and chewy centers. It is not up to standard for $1.00 a pound. Peanut Clusters do not belong in $1.00 boxes. Cocoanut paste is a very poor eating piece of candy. A formula for a good cocoanut center will be furnished if desired. The liner used in this package was a half inch shorter than the box, which did not help the looks of the box upon opening.

Code 4E 29

Home Assorted Chocolates, $1 lb.

(M'f'd in Brookline, Mass.)
(Purchased in Boston, Mass.)

Appearance of package: Cheap-looking. White bond wrapper, tied with printed tape.
Box: Very cheap-looking box. Red paper with printed pansies. This is the cheapest kind of box I have ever seen used for $1.00 candies. No name or trademark on top. Name was inside cover in plain black print.
Appearance of box on opening: Fair. Did not look like dollar goods. Pieces out of place, some on top of others, and goods scratched.
Chocolate Coating: Sweet.
Color: Good.
Gloss: Hardly any.
Strokes: Good.
Taste: Good.
Centers: Almonds: Not roasted enough.
Peanut Taffy Stick. Good.
Chocolate Caramel: Good.
Vanilla Nut Caramel: Good.
Filbert Cluster: Good.
Raisin Cluster: Good.
Nougat: Good. No flavor could be recognized. No nuts used. (See remarks.)
Wintergreen Cream: Fondant too dry. Flavor good.
Butterscotch: Too tough and very little butter flavor.
Molasses Plantation: Too hard to be eaten. Flavor good.
Molasses Chip: Good.
Vanilla Walnut Top Cream: Good.
Peppermint Cream: Good.
Brazil Nut: Had a strong taste.
Green Bon Bon: Turkish paste center too starchy and had very little flavor.
Vanilla Cocoanut Bon Bon: Fair. Cocoanut dry.
Lemon Cocoanut Bon Bon: Fair. Cocoanut dry.
Assortment: Fair.
Remarks: Considerably sub-standard. Much better candy can be had for less money. Packing and everything about this box were far from being in the class of dollar merchandise.

Code 4F 29

Home Made Assorted Chocolates 70c per lb.

(Purchased in a drug store, Boston, Mass.)

Appearance of package: Fair. This package needs a glassine or Cellophane wrapper as the box was dirty.
Box: Blue printed, loose wrapper. Name and trademark in deep blue. Two seals.
Appearance of goods on opening: Good for this price goods. No liner. Suggest one be used.
Chocolate Coating: Sweet.
Color: Fair.
Gloss: Good.
Strokes: Carelessly done.
Taste: Fair for this price goods.
Centers: Caramel: Good.
Peppermint Cream: Good.
Pineapple Cream: Good.
Orange Cream: Good.
Peanut Cluster: Good.
Lemon Cream: Fondant good. Flavor rancid.
Raspberry Cream: Good.
Maple Cream: Good.
Vanilla Cream: Fondant good. No flavor could be detected.
Chocolate Cream: Good.
Molasses Sponge Chips: Good.
Nougat: Good.
Peppermint Jap Jelly or Paste: Flavor good. Paste too "short" and too much green color used.
Assortment: Fair. Too many cream centers.
Remarks: This box at 70c is quite up to standard, although a few more hard centers would help.

Code 4G 29

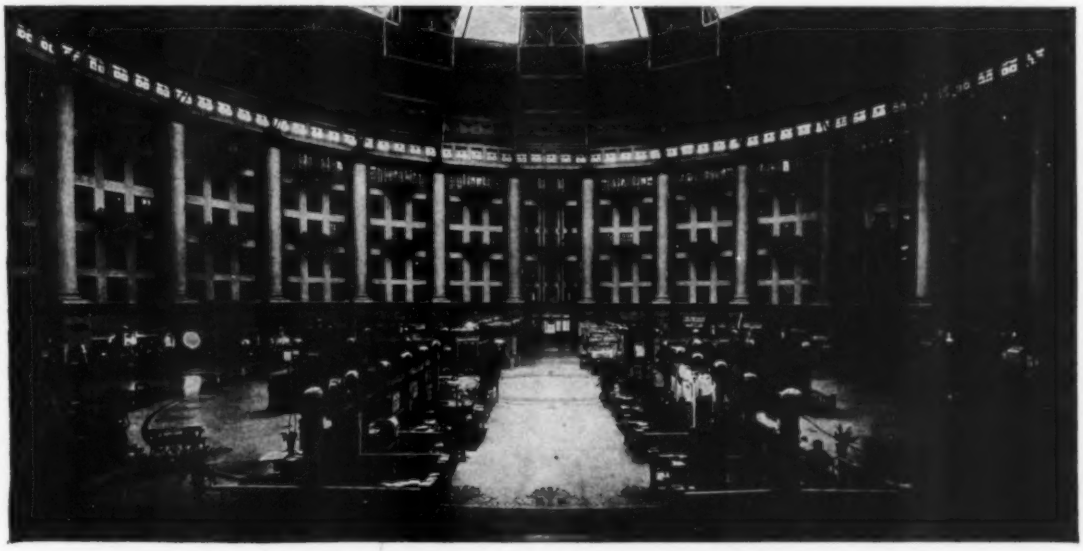
Home Made Assorted Chocolates, $1.00 lb.

(M'f'd in Philadelphia.)

Appearance of package: Very neat and attractive. Cellophane wrapper, two seals on ends, ¾-in. pink ribbon tied four sides.
Box: Light cream embossed paper. All printing in gold. Extension padded top.
Appearance of box on opening: Bad. A number of pieces broken, cream spread over half of the top layer. (See remarks.)
Chocolate Coating: Sweet.
Gloss: Hardly any.
Strokes: Fair.
Taste: Good.
Centers: Butter Taffy or Crunch: Good.
Molasses Chips: Good.
Mint Straw: Very good.
Cordial Pineapple: Very good.
Vanilla Cocoanut Cream: Good taste, but fondant dry and hard.
Cordial Strawberry: Very good.
Pignolia Cluster: Good.
Glace Pineapple Fruit: Good.
Black Walnut Cluster: Nuts very strong. Tasted old.
Brazil: Fair; did not taste very good.
Honey-flavored pulled Taffy: Good
Orange Cream: Very good flavor, fondant hard and dry.
Almonds: Good.
Molasses Sponge: Very good.
Vanilla Cream: Good.
Molasses Plantation: Good.
Black Walnut Cream: Flavor good, fondant dry.
Cream Center: No flavor could be recognized.
Marshmallow: Good.
Nutted Cream: Good.
Chocolate Buttercream: Good.
Filbert: Good.
Cocoanut Paste: Good.
Caramel: Very good.
Raspberry Turkish Paste: Flavor good. Paste too starchy.
Foiled Everton Taffy: Good.
Solid Chocolate Foiled Cigarettes: Good.
Foiled Fancy Shapes: Very good flavored chocolate.
Rose Jordan Almond: Good.
Crystal Strawberry Flavored Jelly: Good.
Almond Paste Strawberry and Pear: Good.
Almond Cherry Sugared: Good.
Chocolate Paste Filled Confection: Good.
Assortment: Very good. Well balanced.
Remarks: This is one of the finest lines of chocolate goods I have ever examined, at the price of $1.00 per pound. The cream centers, however, might be improved. The top layer

(*Continued on page* 60)

Come to the N. C. A. Convention and Exposition--June 3-8, 1929



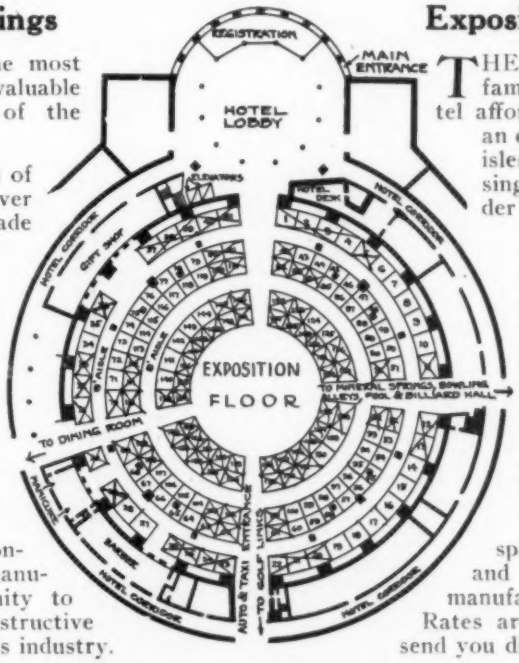
The Pompeian Court of the West Baden Hotel—Where the N. C. A. Exposition Will Be Held.

Convention Doings

THE program promises the most vitally interesting and valuable convention in the history of the N. C. A.

We are planning the details of an absolutely new feature never before undertaken at any Trade Convention. When we "spring it" we venture the opinion that it will be of such paramount interest to every candy manufacturer that nothing short of a broken leg would be a valid excuse for not being there.

Why West Baden Springs?
Because it is one of the most beautiful and picturesque spots in America—the hotel facilities ideal for our 1929 Convention, at which time all manufacturers will have opportunity to concentrate on the most constructive program ever presented to this industry.



Exposition Highlights:

THE Pompeian Court of this world famous West Baden Springs Hotel affords the most ideal layout for an exposition. No pillars, no long isles; a perfect circle, the largest single room in the world—all under glass skylight.

An opportunity to meet the executives of the Confectionery supply field. These contacts and counsel with technical experts in the raw material, machinery and packing material lines are worth making any special adjustment necessary to have your purchasing and production men present at this exposition.

There are few choice exhibit spaces available to the supply and equipment firms selling to manufacturers of confectionery. Rates are very reasonable. May we send you diagram and prices?

National Confectioners Association

111 West Washington St., Chicago

☐ Send literature and full information about the Program, Hotel Rates and plans of your Coming Annual Convention and Exposition at West Baden, Ind.

☐ Send prices and diagram showing available spaces on the Exposition Floor.

Name .....

Address .....

Putting the "Home" in "Home-Mades"

BY ERIC LEHMAN

DURING the past few years the so-called "Home-made" business has come into its own. Previously it was what might have been termed a "one man" affair. The small retailer made and sold his own home-mades from day to day. The home-made business presents a vastly different picture today.

Although thousands of these small manufacturing retailers still thrive, their field is gradually becoming more and more circumscribed by the chains, most of whom specialize to a greater or lesser extent in home-mades. Whereas in the past what home-made business was done was done by the independents,—today, with the field tremendously enlarged by the application of up-to-date methods of merchandising, we find the chains doing the bulk of the business in practically all of the large cities.

There are several sound reasons for this leaning of the chains toward the home-made type of candies. First, the time factor. Lessening the interval between factory and consumer has made it possible for them to handle numbers too perishable to be wholesaled. It was a field which, until quite recently, was almost entirely devoid of wholesale competition. Another and perhaps equally important factor contributing to this tendency of the chains to specialize in home-mades is the fact that by controlling their own stores, displays, etc., they have been able to create in the public mind that illusion of individuality, simplicity and home-iness which has proved so conducive to the sale of this class of merchandise. There existed a natural desire on the part of the public for simple sweets of a pure, home-made character. And atmosphere was indispensable to their successful merchandising.

But of course, with the coming of quantity production in the home-made field, it became necessary to devise machines capable of simulating the results of hand labor at commensurately lower cost. So-called "hand-roll" machines were developed which almost exactly duplicated the texture of the creams rolled by hand, while diminishing the ever-present danger of fermentation due to infection. Means were found to connect up these machines directly to the chocolate coater, thus eliminating the extra handling and making possible continuous production. These and other improvements in home-made manufacture have steadily tended to reduce costs and speed up production to the point where factorized home-mades have become an established industry. To the consumer the introduction of factory methods has meant larger assortments and greater uniformity of the finished product.

Nor have the wholesale manufacturers been asleep meanwhile; for despite the tremendous handicaps of distributing, time and perishability, many interesting and ingenious home-made wholesale packages have already been brought out. But when the wholesaler begins experimenting with the home-made types of candies, particularly the uncoated pieces which should comprise the major portion of the assortments, he is very apt to run into difficulties which he hasn't bargained for. Unless shrewd judgment is exercised in the selection of pieces which will stand up satisfactorily, the wholesale home-made package is foredoomed to failure.

During the last year, a number of these experimental packages have been voluntarily submitted to the Candy Clinic for examination and criticism. Among the most serious faults found with some of these packages, were such things as attempting to use uncrystallized bonbons. undipped nougat on which the precaution had not been taken to wrap in waxed paper, and use of uncoated fudge and other highly perishable pieces which, no matter how desirable their presence in the assortment may have appeared to be, had no right to be included in a wholesale package destined to be knocked about in the usual wholesale channels.

Another criticism of these packages is that the chocolate-coated pieces which were included in the assortments had been taken from the regular line and were not typically home-made in character. Cast creams, for instance, have no place in a home-made assortment. They lack the texture and consistency of the hand-rolled type. Also, fruit creams, butter creams, chewey pieces or uncoated nougat—all characteristic home-made numbers—were apt to have been omitted from the assortment. These centers should appear in the home-

made assortment in addition to the variety ordinarily offered in the regular line.

There is not one of these pieces but which can be made to stand up over long periods of time. The nougat should be of a different formula from that used for dipping, and should be wrapped in waxed paper. The same may be said for fudge, butterscotch, taffies, etc. Bonbons should never be used unless crystallized.

We have frequently been asked, "About what proportion of uncoated goods should a home-made assortment contain?" We should say, one-third chocolates and two-thirds assorted home-mades. It will be observed that the wholesale home-made packages usually have the proportions reversed, which is not what the chains have led the public to expect.

Bittersweet, milk and sweet chocolate coatings—all three—are employed in making up a box of this kind. The centers will include butter creams, fruit creams with real fruit, taffies, brittles, nougats and chewey molasses. The home-made numbers are as a rule wrapped taffies, cocoanut pieces, caramels, nut-nougat rolls, bonbons, etc. The larger the assortment, generally speaking, the more popular the box. Where cream centers such as butter creams are used, make sure that they will stand up and not turn rancid or "blow," or become hard and stale.

The home-made box should be packed as simply as possible—no fancy or "fussy" findings or the home-made effect will be lost.

The solid box of "Home-made Chocolates," as distinct from "Home-mades" in which uncoated goods largely predominate, appears to have gained a substantial following among the independent retailers. Some of these boxes are not worth the prices which are being charged for them. Others are of such excellent value that the day may not be far distant when the little fellows making them will be in a position to give the wholesale manufacturer a run for his money. In general these packages retail from $1.00 to $1.50 pound, and are far superior to the $1.00 to $1.50 packages which are put out by the average wholesaler.

The large wholesale manufacturer might do a lot worse than to gather up a few ideas as to assortment, etc., from this month's Candy Clinic.

HIGH LIGHTS

in coming issues of

The MANUFACTURING CONFECTIONER

CHARACTERISTICS AND WORKING PROPERTIES OF CORN SUGAR

The first comprehensive picture of the new sugar's practical potentialities in the confectionery industry.

—By JOHN M. KRNO

INSIDE OF A MARSHMALLOW

A rare visualization of what goes on inside of a marshmallow before and after it is cast—an analysis which explains many things to the inquiring superintendent.

—By FRANK R. JOHNSON

MEET MR. CACAO-GROWER

A timely admonition to those who profess to be seriously interested in the maintenance of chocolate quality.

—By ROBERT WHYMPER

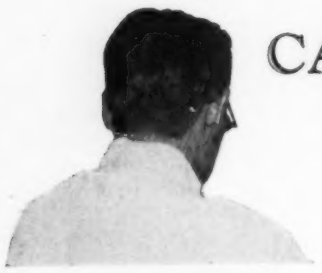
THE ABC OF MECHANICAL REFRIGERATION

Another "Bill and Ed" story in which these two likable personages discuss the underlying principles of refrigeration in a way which makes it simple to understand and easier to enjoy.

—By NORMAN W. KEMPF

Now, we ask you frankly, can you afford to miss any one of these articles? They are written for your especial benefit. Better send us your summer forwarding address right away.

A Super Gets an Earful on CANDY "DOCTORS" and CATALYST "POISONS"



BY N. W. KEMPF
(Chemical Engineer)

"BILL," said the factory superintendent, as he settled down to the usual mid-day snack in the laboratory, "you ought to see how they roll 'em around in that hospital—"

"Ye gods! Must I even listen to the harrowing details of your operation while I'm eating my lunch?"

"No, but—"

"Ed, I believe you *enjoyed* it. You've been doing nothing but talk about it ever since you came back. I thought you wanted to ask me something."

"'s a fact, I did. What the dickdickens was that now?"

"Appendix—nurses—*doctors*, maybe," suggested the chemist helpfully.

"Right! You got all wound up telling me about candy doctors and cat-lists, or whatever you call them, just before I went away—"

"You mean 'catalysts.'"

"That's the stuff. You said cream of tartar, acid, invertase and a lot of things like that which we use to doctor the batch were really catalysts and got the work done without soiling their hands, or something. What's the dope?"

The chemist burst out into a roar. "Ed, I must say you have a positive genius for phrasing scientific explanations."

"Well, tell me, is this catalyst business something they've discovered since you left college? I notice every time I say something about it you give me the big ha-ha and then change the subject. Do you know anything about it or don't you?"

"The three weeks you were in the hospital gave me a wonderful chance to study up on it," Bill replied, dryly. "As a matter of fact, the existence of catalytic action has been known for a century or more. If I'm not mistaken it was the great chemist Berzelius himself who first defined it. Just a minute, I've got him in the cabinet here somewhere."

Bill went to the bookcase, and after a short search pulled out a book and thumbed through it until he came to a passage which seemed to suit him, and said: "Here's what Berzelius said in 1836, Ed:

> **"'It is then proved that several simple and compound bodies, soluble and insoluble, have the property of exercising on other bodies an action very different from chemical affinity. By means of this action they produce, in these bodies, decomposition of their elements and different recombinations of these same elements to which they themselves remain indifferent.'"**

"How's that different from what I said?" inquired Ed.

Apparently oblivious to the interruption, the chemist continued:

> **"'This new force which was hitherto unknown is common to organic and inorganic nature. I will call the force "catalytic force" and I will call "catalysis" the decomposition of bodies by this force in the same way that one calls by the name analysis the decomposition of bodies by chemical affinity.'"**

"All of which means what?" demanded Ed, a little impatiently.

"It simply means that Berzelius recognized the existence of a peculiar force different from ordinary chemical affinity and gave it a name. And while, of course, we know much more about catalysis now than Berzelius did in 1836, we still know very little about its actual nature."

"Another of those 'take it on faith' ideas that are supposed to go over big with the practical crowd," remarked the superintendent ironically.

"I rather expected you to say that, Ed, and I would have been disappointed if you hadn't. Yes, there are several very interesting theories in regard to catalytic action, but each leaves something unexplained.

"According to Ostwald—his paper came more than half a century later 1894):

> **"'Catalysis is the acceleration of a slowly proceeding reaction by the presence of a foreign body.'**

Now could anything be simpler than that?"

"Proceed with the complications."

"Holler 'nuff. . . . Any change in the speed of a reaction which is caused by the presence of a foreign body is an example of catalysis—particularly if the foreign body remains unaffected by the reaction."

"Better get down to pictures, Bill, while I can still get what it's all about."

"All right. I'll write it down. . . . You remember that famous chemical reaction we've been talking so much about lately—the breakdown of sugar:

$$C_{12}H_{22}O_{11} + H_2O = C_6H_{12}O_6 + C_6H_{12}O_6$$

sucrose — water — levulose — dextrose

This reaction starts whenever you dissolve sugar in water. Of course, it proceeds very, very slowly at ordinary temperature, but is speeded up by heat. We know, however, that it is possible to speed up this reaction *without* the application of heat. You do it every time you doctor your fondant batch with invertase.

"If we add to a solution of sugar in water a small amount of one of the more active acids, such as hydrochloric, the reaction becomes complete in several hours, where it would normally take *years*."

"What the—"

"That's right, Ed. And the most remarkable part of it is that the amount of acid present at the end of the reaction is precisely the same as the amount which was present at

the beginning. This is an excellent example of catalytic action, the hydrogen ion furnished so liberally by the acid being the catalyst which speeded up the normally slow reaction between the sugar and the water."

"That sure is a clever trick," Ed enunciated with emphasis. "You know, I always wondered how some of these candymakers could flavor a batch of hard candy and have the same amount of flavor at the finish as they had at the beginning. Now I know—it's *catalysis*!"

"I don't wonder you think so, Ed. A lot of it *is* underflavored.

"No, but, joking aside, Bill, I may be dense, but I admit I still can't see how these catalysts can accomplish anything without getting mixed up in it themselves. If I remember correctly, when I used to put a piece of metal in hydrochloric acid, it killed the acid. In fact, sometimes we used to buy the acid already killed, ready to do a job of soldering."

"That's something else again, Ed. In that case the acid actually united chemically with the metal to form new compounds—being itself used up in the process. But don't confuse that with the action of an acid on a sugar solution where no such chemical union results."

"In other words, the acid is apparently only a bystander?"

"That's one way of looking at it."

"Then how does it work—by hypnotism?"

"I confess it *is* hard to understand, Ed, even for a chemist. As a matter of fact, that's why Berzelius classified catalytic action as something distinct from chemical action. For to him, as to most chemists, chemical reaction implied change, while in catalytic reactions foreign bodies would participate which were not changed either in character or amount at the end of the reaction.

"However, one of the modern theories of catalytic action, the theory now generally accepted by chemists, takes this as the chief criterion of a catalytic action. It defines catalysis as a chemical reaction in which the chemical composition of one of the initial substances is the same as one of the end products.

"This theory holds that the catalyst does actually enter into the reaction, just as in an ordinary chemical reaction, forming, however, some unstable intermediate compound which immediately breaks up, yielding the end products of the reaction, and again setting the catalyst free in its original amount and condition."

"Hold everything! It no sooner gets hitched up, then right away it gets an annulment."

"Ed, I told you you were losing time as a candy superintendent. You're a regular Chinese interpreter."

"Who's a Chinaman? Say, is that 'unstable equilibrium' stuff just another half-baked notion of some guys or have they got some practical dope to back it up with?"

YES,

Bill and Ed ARE real people.

Every now and then since this series began, someone has asked whether Bill and Ed are really candy plant people, or merely a couple of fictitious characters conjured up out of the author's imaginations. Yes, though their names in real life are not Bill and Ed, they are real flesh-and-blood persons exactly like you and me. And that's what makes their discussions so clear, human and interesting. We have enjoyed sitting in on them occasionally ourselves, and we knew you would, too.

—THE EDITOR.

The chemist thought deeply for a moment and then replied: "Well, yes, there are examples of catalytic action in which it has been possible to isolate these intermediate compounds enough to prove their existence. But in the majority of instances these compounds are so very unstable that it is impossible to separate them or demonstrate definitely that they exist. The trend of thought favors this theory, however, and it certainly seems logical to me."

"Well, at that rate," said Ed, "it looks to me as though all you'd have to do would be to find the right doctor and you could produce darned near anything you wanted."

"Not at all," the chemist responded, quickly. "Don't forget what we said at the beginning of our little session. *A catalyst can only accelerate an action which is already taking place.*

"Going back for a moment to the sugar reaction which we were discussing, we consider the hydrogen ion of the acid as entering into the reaction with the sugar molecule and water, giving some intermediate compound, which in turn breaks down into levulose, dextrose and hydrogen ion.

"If the theory is correct, a small amount of catalyst can do an enormous amount of work because it is constantly being built up again by the reaction so that it may be used over and over again. Your own experience will bear this out, as you know what a surprisingly small amount of cream of tartar is necessary to give a substantial amount of inversion. Similarly, the presence of larger amounts of catalyst should speed up the reaction even more so, since there is more reaction taking place at a given time."

"Yes, I know that. The more cream of tartar I add to the batch, the faster the sugar is doctored."

"The same thing is true of invertase; the more you add to your fondant, the faster your creams break down."

The superintendent pondered this for a moment before he said:

"I should think then that this hydrogen ion which we get from the acid or cream of tartar must in reality be very similar to the invertase we get in cans."

"Why so, any more than that because you and George are both blondes, you must both be squareheads? Invertase differs from the other doctors which you use in that it is an enzyme—a living organism possessing catalytic powers. Most of life's processes are governed and controlled by these organisms. They are the traffic policemen of that exceedingly complicated chemistry which is involved in living matter. They slow down some reactions and speed up others."

"Not so fast, Bill. I took the curve with you that time, all right, all right. A minute ago you told me that the purpose of a catalyst was to speed things up. Now you casually spill something about slowing things down. Wha'd'mean, 'acceleration'?"

At which Bill smiled broadly as he replied: "I told you to keep away

Is there somebody in your plant **who might have profited by one of the earlier discussions in the Bill and Ed "Chemistry Explained for the Layman" Series?**

If there is, why not make him a present of a back copy—or better still, name the issue desired, send us a check for $3.00 to cover a year's subscription and, while they last, we will send you the back numbers gratis.

BIBLIOGRAPHY:

The "Super" Gets the Low Down on pH	Oct. 1927
High Jinks in the Fondant Kettle	Dec. 1927
Protective Colloids	May 1928
Family of Sugars	Dec. 1928
Candy "Doctors"	Apr. 1929

ABC of Mechanical Refrigeration—coming in May issue.

from those automobile salesmen, Ed. They're the only ones to whom acceleration means only an *increase* in speed. Acceleration means *change* of speed, and may be either positive or negative. In other words, the change can mean either an increase of speed or a decrease of speed."

"It was *de*celeration the last time I had mine relined. Anyway, I guess I'd better hot-foot it upstairs and see how the plant's getting along. Do you know what time it is?"

"I can probably guess—two-thirty."

"You're not far from it—two-twenty."

"Scandalous! But wait a minite, Ed! Did I ever tell you about catalyst poisons?"

"The which?" demanded the superintendent, incredulously. "Are you going to tell me that some of these doctors we use are *poisons*?"

"Calm down, old-timer. A catalyst poison is a substance which is capable of 'poisoning' the catalyst and rendering it ineffective. I thought that some fine day you would probably stumble over one of them and come down here all excited because I didn't tell you about them."

"Shoot!"

"Imagine a batch being doctored smoothly when suddenly some new substance is added to the picture which combines with the doctor to form a new chemical compound which has no catalytic powers for the reaction. Naturally, the reaction is no longer accelerated and resumes its normal speed.

"Anything which thus destroys the catalytic properties of a catalyst is known as a 'catalyst poison,' and there are many instances in industrial catalytic actions where such poisons are very troublesome."

"We don't have anything like that to worry about in candy making, do we?"

"We certainly do. Heat 'poisons' invertase. It causes a chemical change or breakdown of the enzyme into products which have no catalytic action on the hydrolysis of sugar."

"Well, you can call it poison if you want to, but I know invertase is killed by heat and always have handled it with kid gloves. But, say, I've got to beat it before someone 'poisons' up the plant."

"Allow me to 'accelerate' your exit," Bill replied, suddenly pushing open the laboratory door and heaving his friend, the super, through it.

Dove-tailing Costs

(*Continued from page 39*)

typical samples of the cost summaries used.

"Operating Journal" (Forms I, Ia, II, IIa, III, and IIIa) is the title given to the sheet which is the medium of control over all cost summaries of work in process. The various subdivisions of the manufacturing account which must be controlled individually include: Cocoa, vanilla chocolate, milk chocolate, units, boxing, printing shop, bags, tins, card boxes, milk crumb, and covering chocolate.

The remaining columns are for materials used, labor and burden. The cost summaries are balanced and controlled at the end of the month with the aid of this journal. The amounts of material and labor charged to cost summaries must also be entered in the operating journal. All amounts credited to material and labor accounts become debits to the manufacturing account.

When the costs are completed, the total of the completed summaries (including burden charges) become a credit to manufacturing and a debit to production. The debit and credit entries are posted in total to the general ledger at the end of the month. This is the most important feature of the cost system, as the costs are merged with the general books of accounts and any balances are incorporated in the monthly trial balance.

ASK ME!

Five minutes of fun and mental exercise. The answers to all questions will be found in the reading matter of current issues.

APRIL QUESTIONS

1. Why do bruised or broken cacao beans usually possess an inferior flavor and aroma?
2. What chemical reaction begins to take place the moment ordinary sugar (sucrose) is dissolved in water?
3. Do "doctors" (catalysts) become used up or worn out while in action?
4. Which carmelizes at the lower temperature—pure sucrose (cane sugar) or pure dextrose (corn sugar)?
5. Is it true that because of sugar's natural affinity for mineral substances, candy tends to deplete the teeth of their structural elements, calcium, etc.?
6. What are "catalyst poisons"? Are they a factor to any extent in candy manufacture?
7. What influence on the bone-building processes of the human body has been ascribed to sugar by Dr. Olaf Bergeim?
8. What is the sole function of a "doctor" (catalyst)?
9. Name the breakdown products (Products resulting from the action of a "doctor") of the following compound sugars:

   Cane sugar (sucrose),
   Malt sugar (maltose),
   Milk sugar (lactose)?
10. Is it possible for fermentation to result from crystallization of the sugar in a marshmallow?

Answers to March Questions

1. *What is the formula for determining quickly the "yield" or "over run" of a batch of marshmallow?*

Ans. (A-B) × 100 = % overrun.

(A = the weight of a unit volume of marshmallow before beating;

(B = the same unit volume of finished marshmallow.)

2. *What is meant by "the comfort zone"?*

Ans. The range in temperature and relative humidities within which a maximum amount of work may be done with comfort and safety. A candy factory properly ventilated and kept within the "comfort zone" with respect to temperature and humidity conditions pays dividends to its owners through increased work capacity, fewer rest periods, and fewer absences through sickness and ill health.

3. *Is color an indication of quality in cocoa beans?*

Ans. Yes. Generally speaking, the lighter the color, the milder the flavor. Thus Criollo-type cocoas, which are lightest in color, are unquestionably finest in flavor. The Calabacillo variety is darkest in color and harshest in flavor; while the Forastero types occupy an intermediate position with respect to both color and flavor.

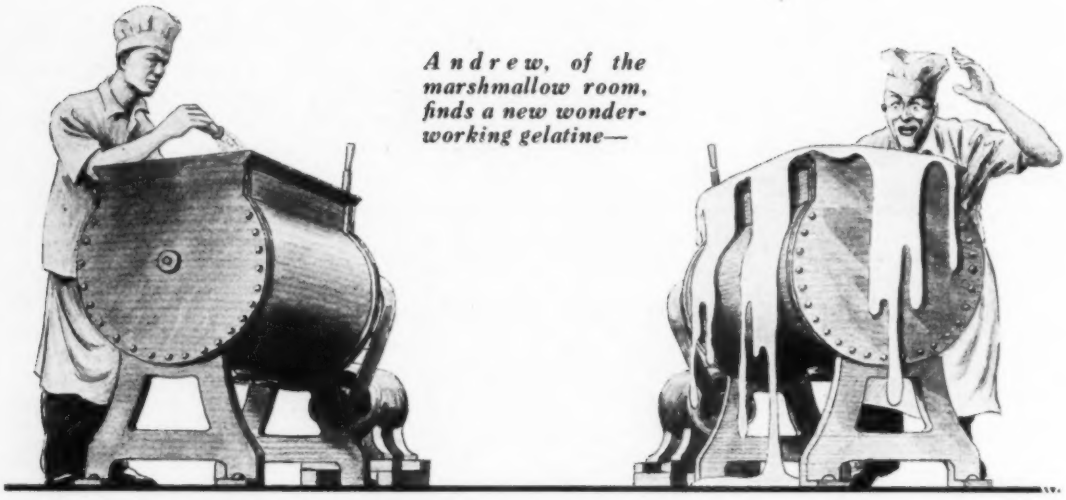
4. *What ratio should be maintained between window surface and floor area to provide adequately for ventilation and lighting in confectionery factories?*

Ans. Floor by floor, the glassed in window area should comprise not less than 1 sq. ft. of glass for each 8 sq. ft. of floor area.

5. *Why are albumen siftings less desirable than whole flakes?*

Ans. The commercial "fines" or siftings comprise the crusts or overbaked portions of albumen adhering to the edges of the baking pans. The beating quality has been sub-

(*Continued on page* 56)



Andrew, of the marshmallow room, finds a new wonder-working gelatine—

"Over-Run"

—What it is and how to control it in marshmallow manufacture

BY PROF. B. I. MASUROVSKY

WHICH is it? Overrun, yield, swell, or count? The terms "yield" and "swell" are synonymous with "overrun." The former are more commonly employed in candy factories, although the latter will be conceded to be more correct. By overrun is meant the relationship between the weights of the same volume of marshmallow material before and after beating.

With the individual pieces assumed to be of standard size, the count per pound of uncoated marshmallows ranges from 55-75 pieces to the pound. This variation in the count is dependent upon a number of factors, such as the type of beater, the kind of ingredients used, and the time employed in processing the batch. The principal factors are the type and grade of gelatine used and the method employed in assembling the various ingredients of the batch. Seemingly insignificant variations of the gelatine will throw the batch out "kilter" and, in consequence, affect the overrun. The general formula for calculating overrun by weight of unit volume may be given as follows:

The weight of a unit volume of the marshmallow material before beating (expressed as A), minus the weight of the same unit volume of finished marshmalllow (expressed as B), multiplied by 100 and divided by the weight of the finished marshmallows per chosen unit volume, equals the percentage of overrun, thus: $\frac{(A-B) \times 100}{B}$ = % overrun. For example, if a quart of marshmallow material before beating weighs two and one-half pounds, and when finished weighs only one pound, then the overrun is 150%. It is figured as follows: $2.5—1 = 1.5$; $\frac{1.5 \times 100}{1} = 150\%$.

In practice any one of several ways of measuring marshmallow overrun may be employed as the control method. One is to determine the overrun as explained in the foregoing paragraph; another is to count the number of standard size pieces per pound of finished marshmallows. The first method applies to bar and sheet marshmallow, while the second method is used primarily on count goods.

Still a third practice employed in the marshmallow industry to measure "overrun" is to figure the volume of finished marshmallow whip obtained from a given

volume or batch of marshmallow material. For example, if the batch equaled ten gallons and the finished whip twenty-five gallons, the "overrun by volume" would be 150% based upon the batch of raw material, or 60% if calculated on the basis of the finished product.

The following factors must be taken into consideration in establishing a control method to insure a uniformly correct overrun:

1. A proper proportioning of the ingredients of the batch.
2. The use of a desirable emulsifying agent.
3. Correct assembling of ingredients.
4. Use of the right type of marshmallow beater.
5. Optimum moisture content.
6. Study of temperature control.

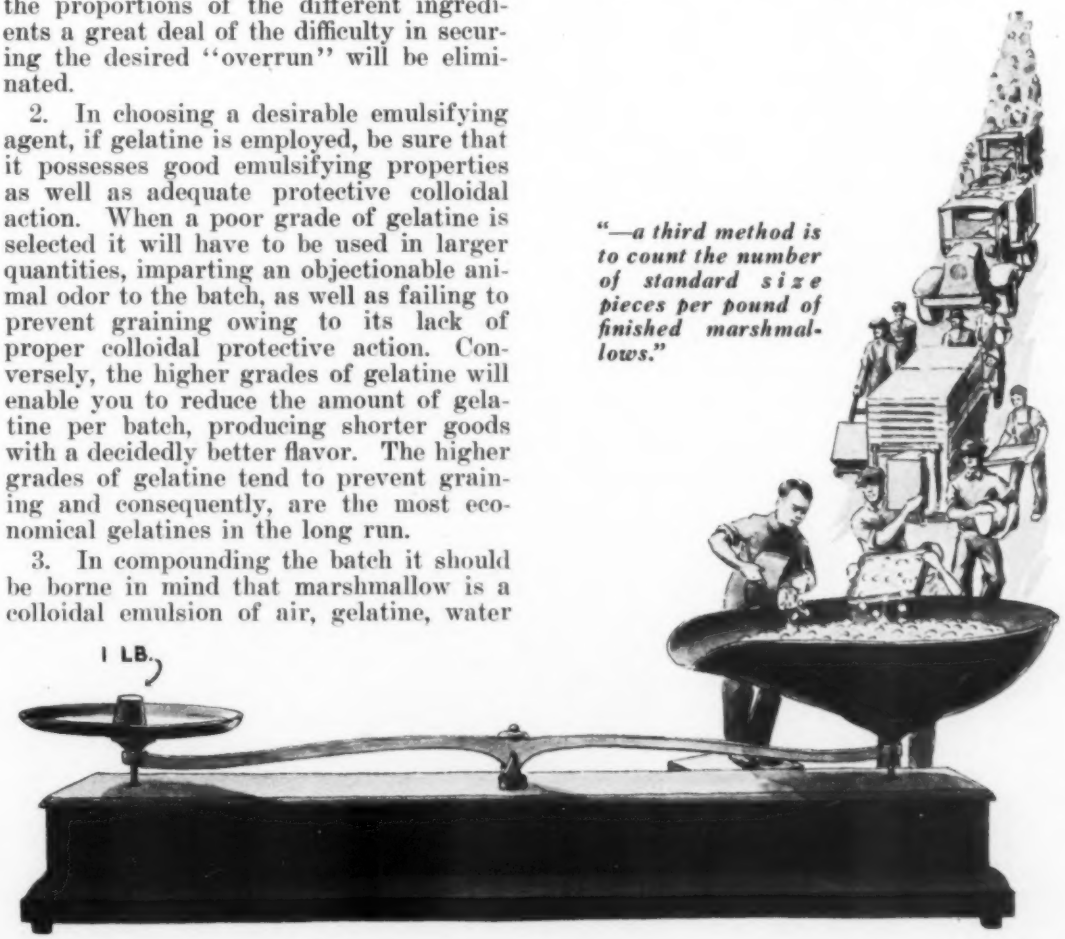
1. It is important that you know the composition of your marshmallow, especially its moisture and gelatine content. You will find that by carefully regulating the proportions of the different ingredients a great deal of the difficulty in securing the desired "overrun" will be eliminated.

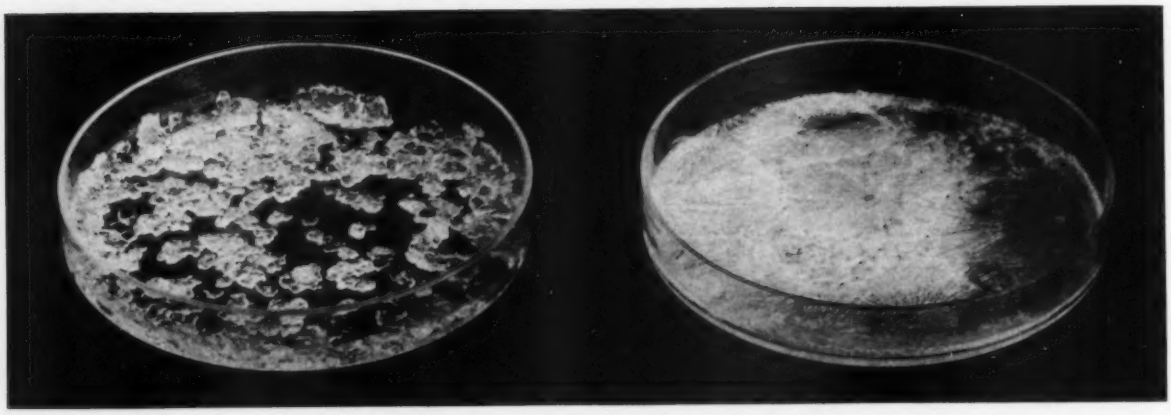
2. In choosing a desirable emulsifying agent, if gelatine is employed, be sure that it possesses good emulsifying properties as well as adequate protective colloidal action. When a poor grade of gelatine is selected it will have to be used in larger quantities, imparting an objectionable animal odor to the batch, as well as failing to prevent graining owing to its lack of proper colloidal protective action. Conversely, the higher grades of gelatine will enable you to reduce the amount of gelatine per batch, producing shorter goods with a decidedly better flavor. The higher grades of gelatine tend to prevent graining and consequently, are the most economical gelatines in the long run.

3. In compounding the batch it should be borne in mind that marshmallow is a colloidal emulsion of air, gelatine, water and sugars in solution (usually cane sugar and corn syrup). Therefore, best results will be obtained by starting to beat up the corn syrup and gelatine solution first, gradually adding the sugar syrup afterwards. In this way the colloidal emulsion becomes fully established at the very beginning of the process and there is more assurance of getting the desired "overrun."

4. So far as using the right type of marshmallow beater is concerned, it depends entirely upon the worker to choose the machine he knows will give him the best results for the conditions under which he is obliged to work. It must be remembered that the machine itself will not accomplish the work satisfactorily unless the man behind the machine understands how to manipulate his batch intelligently—unless he knows, for example, that it is desirable to remove a pailful of the marshmallow batch from the bottom of the beater from time to time, returning it to the top and thus insuring uniformity; to regulate

"—a third method is to count the number of standard size pieces per pound of finished marshmallows."





Showing the effect of the addition of 1 per cent of gelatine to a sugar solution. Observe how the colloidal protective action of the gelatine prevents the formation of crystals (right)

the temperature of the batch according to the type of marshmallow desired; to take care of air circulation during the process, etc.

5. When it comes to moisture content, it is obvious that the optimum amount of moisture to be incorporated in the batch depends largely on the quality and type of goods being produced; count goods possessing better keeping quality with a 15-18% moisture content—bar marshmallows running into about 20%—with hard marshmallow running lowest in moisture content, say around 5-10%.

6. Temperature is extremely important as a control factor in the manufacture of marshmallows. It is a well established fact that the ratè of setting of gelatine is directly influenced by temperature, especially if it be a "quick-setting" gelatine. Similarly, the proper emulsification of the batch is largely influenced by the temperature at which it is beaten. For best results, batch temperatures between 110°-115° Fahrenheit are indicated. Some types of marshmallow, however, are beaten at pasteurization temperature (145° Fahrenheit).

The art and science of manufacturing good marshmallow is in a state of constant evolution and involves many variable factors. From this standpoint it may be likened to the art and science of animal nutrition. The stockman must not only know his live stock, but he must also understand the principles of scientific feeding and be able to apply them in an intelligent manner. Standard diets have been developed to a fine point, but the old adage, "The eye of the master fattens his cattle," is as true today as it was before feeding standards were applied to animal nutrition. So let the eye of the experienced marshmallow maker serve in conjunction with his technical knowledge of the principles underlying the art and science of marshmallow manufacture.

Answers to March Questions (*Continued from page* 53)

stantially impaired by the overcooking.

6. *What necessary function does sugar perform in the human body with respect to fat?*

Ans. Fat is not completely oxidized in the body to the respirable carbonic acid except in the presence of burning sugar.

7. *What is meant by "smoke drift"?*

Ans. A test made with a lighted taper to determine the direction and speed of air motion. Lack of air motion in a factory work room usually results in lowered work capacity. Such air motion should obtain that all times horizontal smoke drift at the rate of not less than 1.5 nor more than 2.5 ft. per second may be observed whenever such smoke is introduced for testing purposes.

8. *What is the trade test for "prime" albumen?*

Ans. The samples are weighed out on the basis 18% fines and the balance flake. To each 1½ oz. of albumen is added 16 fluid ounces of water and the albumen allowed to soak overnight, after which the solution is stirred thoroughly and poured into a 10 qt. Hobart beater, with the beater in 2nd speed; the solution is beaten for 1½ minutes, when it is shifted into "high" or 3rd speed and allowed to run for exactly 3 minutes. 100% albumen will fill its bowl of the beater to overflowing, forming a stiff meringue so that it will not run out when the bowl is inverted.

9. *What relationship has been established by Dr. Sansum between loss of weight and the consumption of sugars and fats?*

Ans. For every unit of weight which a patient may wish to lose and for every unit of fat included in his diet, he must eat an equal amount of carbohydrate. To lose a pound in weight safely, one must eat a pound of carbohydrate.

10. *What is the minimum amount of air which should be provided for each worker in a confectionery factory?*

Ans. 500 cubic feet.

Exhaust fans of proper capacity should be used in the cooking rooms to carry away the bad air, fumes and gases, and keep the atmosphere fresh and healthful.

Courtesy, American Blower Company.

The Proposed SANITARY CODE

prepared by

The Manufacturing Confectioner for the Confectionery Industry

in collaboration with

CAREY P. McCORD, M. D., and Staff

of the

Industrial Health Conservancy Laboratories

(Section V, continued)

(b) VENTILATION

Code Statement

No preference is here expressed for natural ventilation methods over artificial systems or the reverse.

At all times, in any confectionery, the air should be of normal purity and constituency. The air should be maintained at such temperature sweep and humidity as conform to the standards set forth below.

Standards

Natural Ventilation

Every confection worker should be provided, within his or her workroom, with not less than 500 cubic feet of air space. Air change should be secured at the rate of not less than three gradual changes per hour.

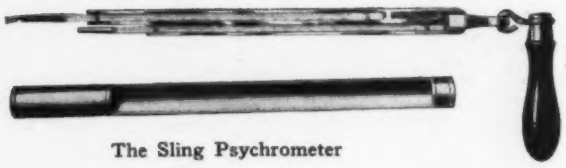
Such air motion should obtain that at all times horizontal smoke drift at the rate of not less than 1.5 nor more than 2.5, feet per second may be observed whenever such smoke is introduced for testing purposes.

A blower of this type is used where duct ventilating is employed

If natural ventilation is utilized, during winter months air current deflecting devices should be installed to prevent too great chilliness for persons near open windows.

If "dead spaces" of air are located in the work place, these should be eliminated by the use of slow moving fans or exhaust fans.

For the combined purpose of lighting and ventilation, the glassed window area of every confectionery, floor by floor, should be not less



The Sling Psychrometer

than one square foot of glass to eight square feet of floor area.

Artificial Ventilation

If artificial ventilation methods are employed, the system installed should deliver, at a minimum, one cubic foot of air per minute for every two feet of floor area.

Hoods should be installed over all cooking units and any other devices that generate excessive heat or objectionable odors or gases. These hoods should be connected with such flues or vents as will effectively draw off all objectionable gases, odors, heat, etc.

(c) *TEMPERATURE, HUMIDITY AND AIR CONTROL*

Code Statement

Proper air conditions should be maintained in every confectionery by proper control of—

(1) Moisture content of the air,

(2) Temperature in relation to moisture content.

Standards

Humidity and Temperature

These are relative terms as concerned with work comfort. It should be the aim of the confectionery manufacturer to maintain the relative humidity as near the "comfort zone" as possible: (Below)

THE "WORK-COMFORT" CHART

Temperature (in F.)	*Relative Humidity*	*Capacity for work*
70°	40	Greatest comfort
	85	Comfort when inactive
	91	Depressing fatigue
80°	20	No discomfort
	65	Discomfort
	80	Rest necessary
	100	Hard work impossible
90°	25	No discomfort
	50	No work should be done
90°	65	Hard work impossible
	81	Body temperature rises
	90	Dangerous to health

In those plants having air conditioning systems, the standards may more easily be maintained. Where hot air is used for heating purposes, humidity should be regulated in some way by arranging for the evaporation of water at various points by means of pots or pans of water suspended in the air conduits or some other such provision.

Wherever steam tables, cooking kettles or other processes are carried on that tend to heat and humidify the air, hoods should be installed to provide adequate exhausting of the superheated air. In addition to hoods, high wall vents or exhaust fans should be installed.

Maintenance

Humidities and temperatures should be measured at regular intervals by an intelligent and properly trained person. These may be measured by means of wet bulb thermometers, such as the sling psychrometer.

Comments

Definite and arbitrary standards for these two qualities in air are almost impossible to establish. It is important for the confectioner to observe conditions of production and to so regulate air conditions, so far as is within his power, as to bring about maximum productivity, which will be the result of optimum air conditions.

Lack of air motion usually results in lowered work capacity. High temperature such as 90° to 95° Fahrenheit, co-existent with high humidities such as 80% to 90%, are most unfavorable to work. Low temperatures co-existent with extremely low humidities are equally harmful.

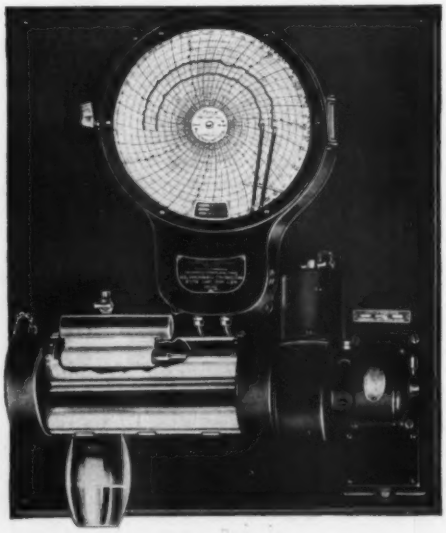
(d) HEATING

Code Statement

Detailed heating specifications are here not given. The building code of the municipality or state in which the confectionery in question is constructed may be accepted as the standard for this item. The following special standards should, however, be observed.

Code Standards

All the apparatus or appliances used in any confectionery for the purpose of heating for human comfort, or heating or cooking any confection material that produces gaseous products as a result of com-



Motor-driven recording hygrometer—Recommended for installations where the circulation of air is relatively poor, since the motor-driven fan draws the air through the tubes that house the wet bulb and dry bulb at a velocity of approximately 600 feet per minute, thereby creating the proper conditions at the bulbs for recording accurate temperatures

bustion, should be connected with vents or flues sufficient in capacity and arrangement to remove completely all such gases to the exterior of the building.

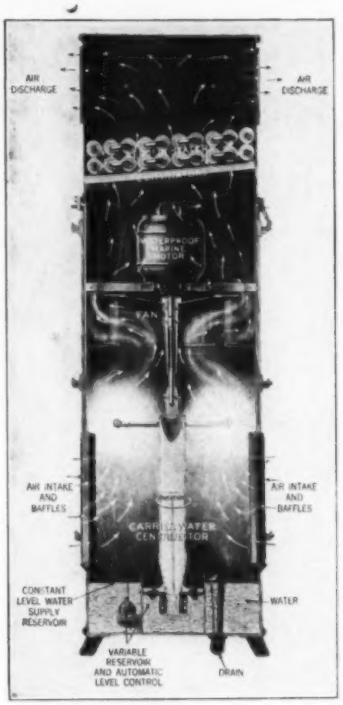
All pipes or tanks containing hot water, steam or other heating substance should be so located or so protected with insulation or guards that workers are not exposed to burns.

Temperatures of the workrooms for human comfort should fluctuate in relation to humidity. Heating should be regulated according to data derived from standard "comfort zone" charts. (g. v.)

No gas appliance for heating, or cooking, or lighting should be installed with flexible hose connections to source of gas supply. No exceptions are to be made of metalized flexible hosing or bendable copper.

Maintenance

It should be the duty of the plant engineer, or his assistants, to maintain all heating equipment in first-class condition at all times, and to see that any needed repairs are carried out without delay.



A unit air-conditioner suitable for workrooms of limited area

(e) *REFRIGERATION*

Code Statement

Refrigeration rooms and equipment should be so maintained as to give a maximum amount of efficiency consistent with the health and safety of employes engaged in these departments.

Code Standards

1. In those plants maintaining refrigeration rooms care should be exercised against the leakage of irritating refrigerants.

2. If ammonia or sulphur dioxide be employed as the refrigerant, one mask properly constructed to fend off these toxic gases should be encased near the entrance to every refrigeration room for emergency use in case a pipe bursts, or other leaks take place, liberating toxic gases.

3. Provisions should be made to avoid high humidity of the air of refrigeration rooms where work is frequent or continuous.

4. The temperature provided in any refrigeration room in which one or more persons regularly work should be the highest that will adequately meet the need for chilling, and for confection chilling after coating not less than 60° F.

5. Raw materials likely to be infested with parasites should not be placed in the same refrigeration room with finished products. If partitions separate one large refrigeration room into subdivisions for the storage of raw material and finished products, all major subdivisions should have separate entryways.

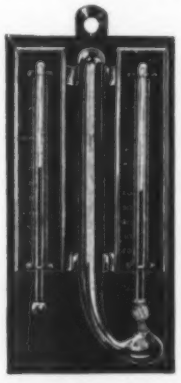
6. Every refrigeration room in which one or more persons are regularly at work should have more than one egress way.

Maintenance

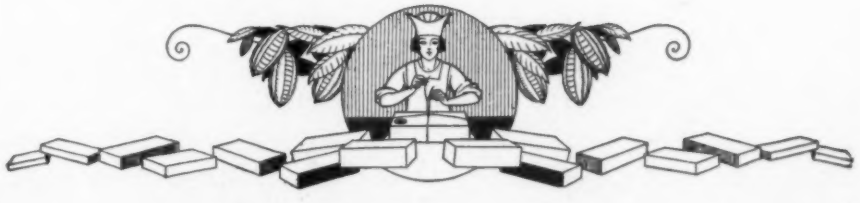
The entire circulating system of the refrigeration plant should be inspected by a competent plumber or mechanic, or refrigeration engineer, at intervals of not more than three months.

(To be continued)

Left—An exhaust fan type ventilator



Above—Mason's Hygrometer, consisting of a wet-bulb and a dry bulb thermometer and provided with a reservoir to supply water to the wet bulb



Candy Clinic

(*Continued from page* 46)

was packed too loose. A divider of some kind is needed to keep the pieces in place. If this package is being shipped parcel post, some checking up is needed, as it was received in very bad condition.

Code 4H 29

Home Made Assorted Chocolates $1.00 lb.

(M'f'd in Peabody, Mass.)
(Purchased in Boston, Mass.)

Appearance of package: Neat and plain. Suggest a better ribbon be used.
Box: Light blue printed paper. Name and trademark in black.
Appearance of goods on opening: Very good.
Chocolate Coating: Sweet.
Color: A trifle too light.
Gloss: Good.
Strokes: Good.
Taste: Too sweet.
Centers: Chocolate Nut Caramel: Good.
Vanilla Buttercream: Good.
Vanilla Cream, Belmont coating: Good.
Nougat: Good.
Cocoanut Cream: Good.
Molasses Nut Kiss: Good.
Bitter Almond Cream: Fair.
Spiced Chocolate Cream: Good.
Opera Caramel: Good.
Butterscotch: Good.
Maple Cream: Flavor very faint. Fondant good.
Wintergreen Cream: Good.
Vanilla Cream: Good.
Orange Cream: Flavor good. Fondant dry and hard.
Vanilla Nut Caramel: Good.
Pecan Belmont: Good.
Sugared Cream: Flavorless. Fondant good.
Walnut Belmont: Fondant good. Flavorless.
Peanut Square: Not enough peanuts used, causing piece to eat hard.
Peppermint Cream: Good.
Cocoanut Paste: Good.
Cream Butterscotch: Good.
Marshmallow Mint Paste: Good.
Assortment: Good.
Remarks: This is a good line of chocolates at $1.00 lb. More care is needed in flavoring the cream centers.

Code 4J 29

Home Made Assorted Chocolates, 2 lbs. $2.00

(M'f'd in Philadelphia.)
(Purchased in Philadelphia.)

Appearance of package: Good. Cellophane wrapper, 2 seals.
Box: White embossed paper used. Padded extension top. Printing in blue; ¾-in. pink ribbon tied corner to corner.
Appearance of box on opening: Good.
Chocolate Coating: Sweet.
Color: Good.
Gloss: Good.
Strokes: Plain, neatly done.
Taste: Very good.
Centers: Brazil: Good.
Black Walnut Chips: Very good.
Maple Colored Marshmallow: Flavorless. Marshmallow very tough.
Filbert Clusters: Filberts not roasted enough. Did not taste good.
Walnut Cluster: Good.
Pecan Cluster: Good.
Almond Scroll: Good.
Belmont Marshmallow: Very tough.
Almonds: Good.
Caramel: Good.
Walnut Belmont: Good.
Nutted Cream: Good.
Nougat: Good.
Pineapple Fruit: Good.
Raisin Clusters: Good.
Chocolate Cream: Had a bad taste. Color not good for a chocolate cream.
Red Jordan Almond: Good.
Milk Chocolate Drops: Good.
Cordial Cherry: Very good.

THE CANDY CLINIC
50-A CORTLANDT STREET
NEW YORK CITY

℞

SECTION TWO

Assorted Home-mades
(uncoated)

will be treated in May for lack of space in this issue.

SUPERINTENDENT

Chocolate Coating: Bittersweet.
Color: Good.
Gloss: Good.
Strokes: Not good. Carelessly done.
Taste: Needs about 10% more sugar.
Centers: Vanilla Cream: Very good.
Orange Cream: Very good.
Marshmallow: Peppermint flavor good. Marshmallow very tough.
Lemon Cream: Good.
Walnut Belmont: Good.
Assortment: Very good. Well balanced.
Remarks: This box was received in a very bad condition. A large number of pieces were broken, and the cream had run, causing three and four pieces to stick together. If this package is shipped by parcels post, a better carton should be used. This is a very fine box of chocolates and would be received in far better condition if packed in a strong carton. The box examined was mailed from Philadelphia to New York City. More care should be taken in making the marshmallows, or a different formula used. Suggest that the Red Jordan Almond and Milk Chocolate Kisses or Drops be left out of the box. These pieces do not help the appearance of the top layer particularly.

Code 4K 29

Home Made Assorted Chocolates, $1.00 lb.

(Purchased in Schnectady, N. Y.)

Appearance of package: Fair. Cellophane wrapper, 2 gold seals on end.
Box: Yellow. Name and trademark printed in copper color.
Appearance of goods on opening: Good.
Chocolate Coating: Sweet.
Color: Too dark.
Gloss: Good.
Strokes: Good.
Taste: Very good.
Centers: Raisin Cluster: Good. (See remarks.)
Peanut Taffy Square: Fair. (See remarks.)
Caramel: Good.
Nougat: A good eating nougat, but flavorless.
Lemon Jap Jelly: Fair. (See remarks.)
Molasses Chewy Taffy: Did not eat good. Flavor good. Use more butter in this center.
Vanilla Cream and caramel: Good.
Brazil: Good.
Brown colored cream: Fondant very good. Flavorless.
Orange Cream: Very good.
Paste Center: A very poor tasting piece of candy.
Marshmallow: Very poor. Use another formula as this marshmallow is not good enough for a $1.00 lb. package.
Molasses Chip: Good.
Lemon Cream: Flavor very poor. Fondant very good.
Apricot Jelly: Good.
Date: Fair.
Raspberry Cream: Good.
Fudge: Fair. Partly dried out.
Milk Chocolate Coated Peanut Taffy: Poor. Peanuts only half roasted and tasted raw.
Assortment: Good.
Remarks: This box of chocolates is not in the $1.00 class. Better boxes can be bought for 80c lb. Raisin Clusters are not dollar candies. The Peanut Taffy is not right. The peanuts should be roasted more and the piece made smaller.

ARE YOU IN SEARCH OF A NEW PIECE?

—an occasional glance around you at what the other fellow is doing will broaden your perspective and help you to originate new ideas of your own.

—The Candy Clinic simplifies the task by searching the highways and byways of the candy mart for you.

Courtesy of The Hershey Chocolate Co.

An Installation of Carver Cocoa Presses

(See other side of this sheet)

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JUN 20 1929

CARVER COCOA PRESSES

Of Latest Improved Automatic Type
Are Replacing Others

BECAUSE THEY PAY

They are the result of thorough development by the inventor

The improved features of these presses are covered by patents, owned solely by Fred S. Carver, as follows:

UNITED STATES

No. 1,247,078...Nov. 20, 1917
1,478,699...Dec. 25, 1923
1,486,633...Mar. 11, 1924
1,502,335...July 22, 1924
1,570,433...Jan. 19, 1926
1,607,722...Nov. 23, 1926
1,679,464...Aug. 7, 1928
(Others allowed and Pending)

GREAT BRITAIN

No. 144,277..July 9, 1917
241,980..July 26, 1924
241,981..July 26, 1924
249,082..Jan. 26, 1925
256,344..May 16, 1925
249,481..Mar. 2; 1926
(Others Pending)

FRANCE

No. 515,236..May 7, 1920
610,186..Jan. 28, 1926
610,411..Jan. 28, 1926
611,303..Feb. 27, 1926
610,547..Mar. 2, 1926
(Others Pending)

GERMANY

No. 941,244..Jan. 29, 1926
939,558..Jan. 30, 1926
(Others Pending)

HOLLAND

No. 18,494..June 16, 1928
(Others Pending)

NOTICE: It has come to our attention that cocoa presses have been brought into this country which infringe several of our patents on the automatic features of our machines.

We wish to give this notice that any persons making, selling or using presses, or press attachments, which infringe our patents will be held accountable accordingly, at the proper time.

We shall appreciate having any such matters brought to our attention.

No rights or licenses under these patents are granted except to our customers, in use of our presses, and licensees holding written license.

FRED S. CARVER

HYDRAULIC ENGINEERING AND EQUIPMENT

Established 1912

90 WEST STREET, NEW YORK

London, Baker Perkins, Ltd.